農業部農業試驗所
TAIWAN AGRICULTURAL RESEARCH INSTITUTE
1895

APHIDIDÆ OF FORMOSA

PART I

BY

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1921

TAIHOKU

AGRICULTURAL EXPERIMENT STATION

GOVERNMENT OF FOR[illegible]A.

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ADDITIONS AND CORRECTIONS.

Page.	Line.
1	2, for Aphidiæ read Aphididæ.
1	7, insert (,) after (Davis).
1	8, insert (,) after Koch.
3	13, insert (;) at the last.
4	17, for *Mrcrosiphini* read *Macrosiphini*.
20	13, for " Cauda yellow " read " Cauda black."
21	8 from bottom, for *Polysticum* read *Polystichum*.
22	8 from bottom, for *arthraxoni* read *arthraxonis*.
29	8 from bottom, for *formosanus* read *formosana*.
30	5 from bottom, omit subtribe at the last.
36	7, 8 and 11, for *papaveri* read *papaveris*.
39	4 from bottom, for *papaveri* read *papaveris*.
41	11 from bottom, for *leonurii* read *leonuri*.
46	9, for *Callicaapa* read *Callicarpa*.
48	3 from bottom, for possitively read positively.
57	14, for oats read oat and grasses grass.
74	16, for colur read colours.
80	3, for auther read author.
85	11 and 13, for *actinodaphni* read *actinodaphnis*.

Explanation of Plate IX, line 9, for *Neocapræ* read *neocapræ*.

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1895

APHIDIDAE OF FORMOSA.—I.

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INTRODUCTION.

Among the more important insect pests of our economic plants in Formosa are those of the family Aphidiae or plant-lice.

Most of the species are of no economic importance, but there are many which are well known pests of our cultivated crops.

For example, *Oregma lanigera* (**Zehntner**) is a wide-spread pest, of considerable importance, of the sugar cane.

The cabbage aphis, *Rhopalosiphum pseudobrassicae* (**Davis**) and the cucumber aphis, *Aphis malvae* **Koch** are regarded by native growers as extremely troublesome pests, although they are easily killed with any of the common contact insecticides.

Aphis gossypii **Glov.**, *Aphis medicaginis* **Koch**, *Toxoptera aurantii* (**Boyer**), *Myzus persicae* (**Sulz.**) and *Pentalonia nigronervosa* **Coq.** are also well known pests in our island.

These insects are kept well in check by their natural enemies, such as the ladybird-beetles, the syrphid flies, the lace-wings, the parasitic Hymenoptera, etc.

Of the ladybird-beetles, probably the most efficient in Formosa are *Coccinella 7-punctata* **L.**, *Synonycha grandi* **Thunb.**, *Ptychanatis axiridis* **Pall.** and *Scymnus spp.*

Of the syrphid flies there are many species feeding on plant-lice in our island. *Chrysopa formosae* **Mats.** and *Chrysopa boninensis* **Okam.** seem to be the most common aphid enemies among the lace-wings.

Among the parasitic Hymenoptera there are about five very common species in Formosa.

Aphids present several unusual and remarkable peculiarities in their life-history and in recent years considerable attention has been paid to them in many parts of the world. A large amount of literature has resulted from this study, but the group still requires a thorough investigation from several aspects.

In the oriental region Prof. van der Goot and the late Mr. Das made considerable progress in the systematic study of these insects. The study of oriental Aphididae, however, is still quite in its infancy, less than one hundred and thirty species having been described from Java, Ceylon, British India, Singapore and Hongkong and a considerable number of species probably remain to be discovered and worked up.

From Formosa, Prof. Matsumura, Dr. Shiraki and Mr. Maki have recorded about twenty-five species.

At present there are about one hundred species known to occur in the island, but this number will be greatly increased as further studies are made.

These studies on the Formosan Aphididae were carried out chiefly at Taihoku under the direction of Dr. Shiraki, Chief of the Division of Entomology, and the present publication forms only a part of the entire investigation. The results of further studies will be published later.

The types of the new species dealt with in this paper are preserved in the collection of the entomological laboratory of this station. All the drawings accompanying this paper were made by the author.

The author here wishes to express his sincere thanks to Dr. Shiraki for his kind and valuable help in conducting these investigations.

The author's most cordial thanks are due to the Hon. Dr. K.

Oshima, director of the Agricultural Experiment Station, Government of Formosa, for his kindness in publishing this paper.

Thanks are also due to the author's colleagues in this laboratory for their kind assistance during the progress of this study.

The author must also render grateful thanks to Dr. C. P. Alexander for kind counsel and advice.

Family **Aphididae.**

(1) Parthenogenetic females viviparous; sexual females oviparous. ... ...Subfamily *Aphidinae.*
Parthenogenetic and sexual females always oviparous.... ... ... Subfamily *Chermesinae.*

Subfamily **Aphidinae.**

(1) Cornicles very elongate, provided with numerous long bristles or wingless females covered with many prominent elongate branched projections. ... ... Tribe *Trichosiphina.*
Cornicles long or short, or sometimes absent, never provided with numerous long bristles; wingless females never covered with many prominent branched projections. ... ...(2)

(2) Last antennal joint with a distinct spur or terminal process, which is almost always as long as or longer than the base, if shorter, the cauda wart-shaped and the anal plate sinuated.... ... ...(3)
Last antennal joint with a short spur.... ... ...(4)

(3) Cornicles usually not very short; cauda not constricted at the base; anal plate not bilobed... ... ... Tribe *Aphidina.*
Cornicles usually very short; cauda often constricted at the base; anal plate often bilobed. ... ... Tribe *Callipterina.*

(4) Aleyrodiform Stages often developed; anal plate often sinuated; cauda often constricted at the base.... ... Tribe *Hormaphidina.*
Aleyrodiform Stages not developed; anal plate not sinuated; cauda not constricted at the base. ... ...(5)

(5) Antennal Sensoria often annular; winged form not provided with many hairs; cornicles very short or often absent. ... ... Tribe *Pemphigina.*

Antennal sensoria circular or oval; winged form provided with many hairs; cornicles short, often situated on hairy cones. ... ... Tribe *Lachnina.*

Tribe **Aphidina.**

Key to subtribes.

(1) Top of head forming a ledge which extends out over the antennae... ... ... Subtribe *Vesiculaphidini.*

Top of head not forming a ledge.... ... ...(2)

(2) Head without prominent frontal tubercles... Subtribe *Aphidini.*

Head with prominent frontal tubercles ... ...(3)

(3) Stigmatic vein strongly curved or more or less united with the upper branch of the 3rd oblique. ... ... Subtribe *Pentalonini.*

Stigmatic vein normal. ... ... Subtribe *Mrcrosiphini.*

Subtribe **Macrosiphini.**

(1) Cornicles cylindrical or tapering, scarcely swollen. ... ...(2)

Cornicles swollen. ... ... *Amphorophora* **Buckt.**

(2) Frontal tubercles with a prominent projection.... *Phorodon* **Pass.**

Frontal tubercles without such a projection. ... ...(3)

(3) Frontal tubercles strongly convex on the inner side....*Myzus* **Pass.**

Frontal tubercles not strongly convex on the inner side.... ...(4)

(4) Cornicles as long as or shorter than the cauda. ... ... *Macrosiphoniella* **Del Guel.**

Cornicles longer than the cauda.... ... ... *Macrosiphum* **Pass.**

Key to species of *Macrosiphum.*

(1) Wingless females provided with numerous sensoria scattered over the 3rd antennal joint. ... ...(2)

Wingless females provided with about 1 to 10 sensoria near the base of the 3rd antennal joint. ... ...(3)

(2) General colour red... ... ...*M. formosanum* n. sp.
General colour brownish black. ... ...*M. gobonis* **Mats.**

(3) Cornicles very long and slender, reaching far beyond the caudal apex... ... ... *M. neoartemisiae* n. sp.
Cornicles not as long as above. ... ...(4)

(4) Cornicles almost not imbricated. ... ... *M. paederiae* n. sp.
Cornicles distinctly imbricated. ... ...(5)

(5) Cornicles not at all reticulated. ... ... *M. pisi* **(Kalt.)**
Cornicles with at least the tips reticulated... ... ...(6)

(6) Spur of the last antennal joint of the wingless viviparous female as long as or longer than the 3rd joint. ... ...(7)
Spur of the last antennal joint of the wingless viviparous female shorter than the 3rd joint. ... ...*M. rosae* **(L.)**

(7) Cornicles almost reaching the caudal apex. ... ...(8)
Cornicles not reaching the caudal apex. ... ...*M. alopeculi* n. sp.

(8) Spur of the last antennal joint much longer than the 3rd joint. ... ... *M. similacifoliae* n. sp.
Spur of the last antennal joint as long as the 3rd joint. ... ... *M. miscanthi* n. sp.

Macrosiphum gobonis **Mats.**

Matsumura, Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 395 (1917).

Macrosiphum solidaginis, **Maki,** Agr. Expt. St. Formosa, Bull. 103, p. 11 (1916).

Hosts.—*Arctium lappa, Cirsium japonicum, Crepis japonica. Saussurea affinis.*

Distribution.—Formosa (Taihoku, Kagi, Shirin, Urai, Kiirun); Japan (Tokyo, Sapporo).

This aphis is one of the most common species in Japan and Formosa. Near Tokyo, the winged forms may be found almost

throughout the year very commonly, winged males and wingless oviparous females sometimes occurring as late as December.

In Formosa the species is very abundant from December to April and is quite rare during the summer, and the sexual forms do not appear throughout the year.

Macrosiphum giganteum **Mats.** (Trans. Sapporo Nat. Hist. Soc. vol. vii, pt. 1, p. 2, 1918) seems to be identical with this species, although its original description is too hrief to decide this positively.

Macrosiphum formosanum n. sp. (PL. X, 2, figs. 5–8).

Macrosighum picridis, **Maki,** Agr. Expt. St. Formosa, Bull. 103, p. 9. (1916).

Wingless viviparous female.

Red. Metathorax and the 1st and 2nd abdominal segments usually black. Eyes, antennae and cornicles black. Legs pale brown, apical halves of femora, apices of tibiae, and tarsi black. Cauda yellow. Body provided with a few stout capitate hairs; some hairs on the head similar, longer. Frontal tubercles large, not convex on the inner side. Antennae very long and slender, with a few capitate hairs; the 3rd joint provided with about 80 small, protruding circular sensoria scattered over the whole length; the 4th joint somewhat imbricated, lacking sensoria; the relative length of joints as follows: III–142, IV–36, V–35, VI–104 (12+92). Rostrum reaching beyond the middle legs. Cornicles cylindrical, long, about 1.5 times as long as the cauda, not reaching the caudal apex, almost as long as half the 3rd antennal joint; slightly expanded towards the base, imbricated, distinctly reticulated on the distal one third. Cauda large, ensiform, provided with about 8 pairs of long lateral bristles.

Legs very long and slender, covered with many moderately long capitate hairs.

Length of body—3.0 mm. Antenna—3.5 mm.
Cornicle—0.8 mm.

Winged viviparous female.

Dark red. Head and thorax blackish red. Eyes dark brown. Antennae and cornicles black. Abdomen dark red, except the basal half of the dorsum and the underside black.

Wings hyaline, stigma pale yellow, veins yellowish brown. Cauda yellow. Legs pale brown, apical halves of femora, apices of tibiae, and tarsi black. Body provided with some capitate hairs. Frontal tubercles large, shorter than the 1st antennal joint. Antennae very long and slender, with a few capitate hairs; the 3rd joint provided with about 80—90 small prominently protruding circular sensoria scattered over the whole length; the 4th joint sparcely imbricated, without sensoria; the relative length of joints as follows: III—154, IV—41, V—40, VI—108 (13+95).

Rostrum reaching the middle coxae. Hind wings with 2 parallel obliques, hooklets 3. Cornicles cylindrical, broadest at the base, somewhat tapering, long and slender, not reaching the caudal apex, imbricated, reticulated on the distal two fifths. Cauda large, ensiform, provided with 8 pairs of lateral bristles. Legs very long and slender, with many knobbed setae; the 2nd tarsus long and slender.

Length of body—2.2 mm. Antenna—3.5 mm.
Fore wing—3.3 mm. Cornicle—0.68 mm.

Hosts.—*Sonchus oleraceus*; *Lactuca brevirostris*; *Lactuca debilis*, *Lactuca formosana*; *Lactuca scariola*; *Lactuca gracilis*.

Distribution.—Formosa (Taihoku, Shirin, Urai, Kiirun, Tansui, Sozan, Kagi, Kwanshirei); Japan (Tokyo).

Related to *M. compositae* **Theob.,** but differs from it in the colour of the cauda.

The species is one of the most common aphids in Japan.

Near Tokyo, the sexual forms make their apperance in November, but in Formosa they do not occur throughout the year. The winged forms are very common at almost all times in Formosa, as well as, in Japan.

Macrosiphum rosae (L.) (Pl. X, 1, Figs. 6-8)

Aphis rosae, **Linnnaeus,** Syst. Nat. i, 2, p. 734 (1767); **Fabricius,** Syst. Rhyng. p. 298 (1803); **Kaltenbach,** Mon. Pflaz. p. 3 (1843).

Siphonophora rosae, **Koch**, Die Pflaz. p. 178 (1857); **Buckton,** Monog. Brit. Aphid. i, p. 103 (1875); **Thomas,** Bull. 2, Illinois St. Lab. Nat. Hist. p. 5 (1878); **Oestland,** Geol. and Nat. Hist. Survey of Minnesota, p. 24 (1886).

Nectarophora rosae, **Oestland**, Geol. and Nat. Hist. Survey of Minnesota, p. 81 (1887); **Clark,** Canad. Entom. xxxv, p. 254 (1903).

Macrosiphum rosae, **Fullaway,** Ann. Rept. Hawaii Agric. Expt. St. for 1909, p. 25 (1910); **Essig,** Pom. Jour. Ent. v, p. 550 (1911); **Theobald,** Jour. Econ. Biol. viii, p. 55 (1913); **Theobald,** Bull. Ent. Research, iv, pt. iv, p. 318 (1914); **van der Goot,** Beiträge Kenntnis Holland. Blattl. p. 87 (1915); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 361 (1917); **van der Goot,** Contrib. Fauna Indes Neerland. i, iii, p. 17 (1917); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc. 4th S., viii, 3, p. 51 (1918); **Swain,** Univ. Calif. Pub. tech. Bull. Coll. Agr. Expt. St. iii, 1, p. 67 (1919).

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Hosts.—*Rosa spp.*

Distribution.—Formosa (Taihoku, Kagi); Japan. Java (v.d. Goot); Ceylon (v.d.G.) India? (Lefroy); Hawaii (Fullaway); Australia (Froggatt); Africa (Theobald); Europe; North America.

Macrosiphum rosaeformis **Das,** to which *M. rosae* (**L.**) is closely related, has never been collected in Formosa.

Near Taihoku I have collected many yellow individuals of this species in May.

Macrosiphum miscanthi n. sp. (Pl. I, 2, Figs. 6–8).

Wingless viviparous female.

Described from a specimen preseived in alcohol. Pale yellowish brown. Antennae and cauda pale yellowish brown. Cornicles dark

brown, with the apices darker. Legs pale brown; apices of femora and tibiae darker.

Body elongate ovate, broadest at the middle of the abdomen, with a few stout hairs, some of which are slightly capitate.

Frontal tubercles large. Antennae with some stout hairs, mostly somewhat capitate; the 3rd joint not imbricated, with 3 sensoria in a row near the base; the 4th not imbricated, without sensoria; the 5th slightly imbricated, the apical sensoria very small; the relative length of joints as follows: III–93, IV–74, V–55, VI–110 (14+96). Rostrum reaching the middle coxae. Cornicles cylindrical, very long and slender, but expanded at the base, reaching the caudal apex, slightly imbricated, and at the tip with a distinct reticulation. Cauda ensiform, with about 8 long bristles. Legs long, with numerous stout setae.

Length of body—2.6 mm. Antenna—3.6 mm.
Cornicle—0.83 mm.

Closely allied to *M. granarium* (**L.**), from which it is readily distinguished by the structure of the antennae and the length of the cornicles.

Host.—*Miscanthus sp.* Collected by Mr. Maki.

Distribution.—Formosa (Taihoku).

Macrosiphum alopeculi n. sp. (PL. 1, 2, Figs. 1–5).

Wingless viviparous female.

Described from specimens preserved in alcohol. Yellowish brown. Eyes black. Antennae, legs and cauda yellowish brown. Cornicles yellowish brown with the apices black.

Body oblong, broadest at the middle of the abdomen, nearly destitute of hairs. Head with a few short slightly knobbed hairs; frontal tubercles moderately conspicuous.

Antennae with a few short hairs which are somewhat capitate; the 3rd joint not imbricated, with 2 or 3 small sensoria in a row near

the base; the 5th very slightly imbricated, the apical sensoria very small; the relative length of joints as follows: III–50, IV–31, V–28, VI–60 (12+48). Rostrum nearly reaching the middle coxae. Prothorax with a small tubercle on each side, which is not pointed.

Cornicles cylindrical, long and slender, not reaching the caudal apex; reticulated on their apical portion and expanded at their bases. Cauda ensiform, with 3 pairs of long bristles.

Length of body—2.0 mm. Antenna—1.8 mm.
Cornicle—0.4 mm.

Closely related to *M. miscanthi Tak.*, from which it is readily distinguished by the smaller body.

Host.—*Alopeculus sp.* Collected by Mr. M. Maki.

Distribution.—Formosa (Taihoku).

Macrosiphum pisi (**Kalt.**)

Aphis pisi, **Kaltenbach,** Mono. Pflanz., p. 23 (1843).

Siphonophora pisi, **Koch,** Die Pflanz., p. 190, pl. xxxv, figs. 261–262 (1857); **Buckton,** Mon. Brit. Aphid. i, p. 134, pl. xiv (1875); **Thomas,** Bull. 2, Illinois St. Lab. Nat. Hist. p. 8 (1878); **Oestland,** Geol. Nat. Hist. Survey Minnesota, p. 25 (1886).

Nectarophora pisi, **Oestland,** Bull. 4, Geol. Nat. Hist. Survey Minnesota, p. 82 (1887); **Sanderson,** Canad. Ent. xxxiii, p. 31 (1901); **Essig,** Pomona Jl. Entom. ii, p. 336 (1910).

Nectarophora destructor, **Johnson,** Canad. Ent. xxxii, p. 56 (1900).

Macrosiphum pisi, **Sanborn,** Kansas Univ. Sc. Bull. iii, No. 1, p. 79, pl. xv, fig. 80 (1904); **Gillette,** Jour. Econ. Entom. iv, p. 384 (1911); **Theobald,** Jour. Econ. Biol. viii, p. 134, fig. 43 (1913) and Bull. Ent. Research, vi, p. 105 (1915); **Davis,** U. S. Dept. Agr. Bull. 276 (1915); **van der Goot,** Beiträge Kenntniss Holland. Blattl. p. 85 (1915); **Maki,** Agr. Expt. St. Formosa, Bull. 103 (1916); **van der Goot,** Contrib. Fauna Indes Neerland. i, iii, p. 15 (1917); **Matsu-**

mura, Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 361 (1917); **Das,** Memoirs Ind. Mus. vi, 4, p. 157, pl. xv, figs. 1–3 (1918); **Swain,** Univ. Calif. Pub. tech. Bull. Coll. Agr. Agr. Expt. St. iii, 1, p. 66 (1919).

Acyrthosiphum pisi, **Mordwilko,** Faune Russie Ins. Hemipt, i, p. 83 (1914).

Hosts.—*Pisum spp.*

Distribution.—Formosa (Taihoku); Japan.

Java (v. d. G.); India (Das); Africa (Theobald); Europe; North America.

Macrosiphum paederiae n. sp. (PL. II, 2, Figs. 1–5).

Wingless viviparous female.

Yellowish red. Head blackish brown. Eyes black. Antennae pale brown with apices of the 3rd, 4th and the 5th joints, and the 6th, black. Cornicles black. Cauda brown. Legs pale brown; apices of femora and tibiae, and tarsi black. Body oval, broadest between the cornicles, with a few very short capitate hairs on the dorsum and a few short bristles on the underside. Head with many moderately long capitate hairs. Frontal tubercles conspicuous, on the inner side distinctly convex. Antennae very long; with a few very short capitate hairs; the 3rd joint near the base with a small sensoria; the 5th slightly imbricated, the apical sensoria very small; the relative length of joints as follows: III–73, IV–56, V–53, VI–111 (16+95). Rostrum reaching beyond the middle coxae. Cornicles long and slender, reaching the caudal apex, almost without imbrication; narrowed near the apex, very slightly dilated at the middle and expanded at the base. Cauda large, with a few lateral bristles. Legs very long and slender, with numerous short hairs, most of which are somewhat knobbed.

Length of body—2.3 mm. Antenna—3.2 mm.
Cornicle—0.7 mm.

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Host.—*Paederia tomentosa*.

Distribution.—Formosa (Taihoku, Kagi, Shirin); Japan (Tokio).

Macrosiphum smilacifoliae n. sp.

Wingless viviparous female.

Head yellowish brown, slightly dusky. Eyes dark red. Antennae and cornicles black. Thorax yellowish brown, dusky on the dorsum. Abdomen shining, brownish black on the dorsum with a pale yellowish patch at the base of the cornicle and at the middle of the dorsum between the cornicles; greenish on the underside. Cauda yellow. Legs yellowish brown, distal halves of femora, apices of tibiae, and tarsi black. Body not elongated, with some very short, slightly knobbed hairs. Head with a few rather short capitate hairs. Frontal tubercles shorter than the 2nd antennal joint. Antennae long and slender; the 1st joint much larger than the 2nd; the 3rd joint with a rather small sensoria near the base and some short stout hairs; the 4th joint somewhat imbricated, lacking sensoria; the relative length of joints as follows: III–80, IV–66, V–56, VI–143 (23+120). Body lacking lateral tubercles.

Rostrum reaching a little beyond the middle coxae. Cornicles somewhat imbricated, well reticulated on the apical one fifth, 1.5 times as long as the cauda, reaching near the caudal apex, constricted near the apex, gradually broadened towards the base, broadest at the base, about 6 times as long as wide. Cauda ensiform, with 3 or 4 pairs of lateral bristles.

Legs long and slender, with some moderately long setae.

Length of body—2.0 mm. Antenna—2.9 mm.

Cornicle—0.63 mm.

Host.—*Smilax chinensis*, attacking the leaf.

Distribution.—Formosa (Taihoku).

Collected by Mr. Sueta.

Macrosiphum neoartemisiae n. sp.

(PL. I, 1, Figs. 1–5 and PL. IX, 2, Figs. 6–9).

Wingless viviparous female.

Green. Eyes dark brown. Antennae black with the base of the 3rd joint pale brown. Femora pale brown with the apices black; tibiae and tarsi black. Cornicles black, green at the base. Cauda dark green.

Body oval, rather wide, broadest at the middle of the abdomen, with some long hairs, some of which are knobbed. Frontal tubercles large, not gibbous on the inner side. Antennae very long, provided with some setae; the 3rd joint not imbricated, with 3–4 small sensoria in a row near the base; the 4th slightly imbricated, wanting sensoria; the relative length of joints as follows: III–51, IV–42, V–36, VI–69 (11+58). Rostrum reaching beyond the middle coxae. Body with no lateral tubercles.

Cornicles slender and very long, extending far beyond the abdominal apex; scarcely imbricated; very slightly dilated on their apical portion and slightly expanded at the base. Cauda large and ensiform, with some lateral hairs.

Legs very long and slender, furnished with many short setae.

Length of body—2.3 mm. Antenna—2.3 mm.

Cornicle—1.2 mm.

Winged viviparous female.

Green. Eyes red. Antennae black, with the base of the 3rd joint green. Mesothorax brownish green. Femora green, at the apices black; tibiae and tarsi black. Cornicles blackish, paler at the base. Cauda green. Wings hyaline, with gray veins and stigma. Body with some slightly capitate hairs. Head with numerous hairs, mostly capitate. Frontal tubercles large. Antennae with some bristles and capitate hairs; the 3rd joint with about 20 sensoria scattered about the middle part and very slightly imbricated; the

relative length of joints as follows: III–60, IV–55, V–52, VI–96 (20+76). Rostrum reaching to the middle legs. Cornicles as in the wingless form. Cauda slender, with about 8 pairs of long lateral bristles. Legs long, furnished with numerous moderately long bristles.

The 2nd and 3rd obliques nearly parallel; the fork of the 3rd extending to the wing apex; hind wings with 2 obliques not parallel; hooklets 5.

Length of body—1.7 mm Antenna—2.0 mm.
Cornicle—1.0 mm. Fore wing—2.3 mm.
Width of fore wing—0.9 mm.

Host.—*Artemisia capillaris.*

Distribution.—Formosa (Taihoku, Shirin).

The wingless and winged viviparous females are found almost always throughout the year near Taihoku.

Key to species of *Macrosiphoniella.*

(1) General colour green. ... ... *M. tanacetarium* (**Koch.**)
General colour black or brownish red. ... ...(2)

(2) Wingless viviparous females with one sensoria near the base of the 3rd antennal joint. ... ... *M. citricola* **v. d. Good.**
Wingless viviparous females with about 5–8 sensoria on the 3rd antennal joint. ... ...*M. formosartemisiae* n. sp.
Wingless viviparous females with about 20 sensoria on the 3rd antennal joint. ... ...*M. sanborni* (**Gillette**).

Macrosiphoniella citricola **van der Goot.** (PL. III, 1).

Contrib. Fauna Indes Neerlandaises, i, III, p. 34 (1917).

Host.—*Cinnamomum* sp.; *Lasianthus sp.*

Distribution.—Formosa (Taihoku, Urai, Toyen); Java (v. d. G.); Singapore (v. d. G.).

Collected by the late Mr. I. Nitobe on *Cinnamomum sp.*

Hitherto unrecorded from Formosa.

Macrosiphoniella formosartemisiae n. sp. (PL. I, 1, Figs. 6–9).

Wingless viviparous female.

Shining black. Eyes, cornicles and cauda black. Antennae black, except the base of the 3rd joint which is pale brown. Legs black with the bases of femora pale brown.

Body oval, broadest at the middle of the abdomen, with some moderately long stout hairs. Frontal tubercles very large, with numerous stout hairs, but no capitate ones. Antennae with some moderately long capitate hairs; the 1st joint much larger than the 2nd; the 3rd with 5–8 small round sensoria in a row near the base, the 4th slightly imbricated, without sensoria; the relative length of joints as follows: III–45, IV–37, V–35, VI–67 (12+55). Rostrum reaching the base of middle coxae. Prothorax and abdomen without lateral tubercles. Cornicles imbricated, broadest near the base, slightly constricted at the base, tapering on the apical portion, and reticulated on the distal one third.

Cauda as long as or a little longer than the cornicle, ensiform, with some long bristles. Legs very slender, with numerous stout knobbed hairs; the 2nd tarsal joint nearly 6 times as long as the 1st.

Length of body—2.2 mm. Antenna—2.5 mm.
Cornicle—0.5 mm.

Winged viviparous female.

Black. Abdomen greenish black. Antennae black, except the 3rd joint which is pale brown. Eyes blackish brown. Cornicles and cauda black. Wings hyaline, with pale yellow stigma and pale brown veins. Legs black, except the base of the femur which is pale brown.

Body with some stout hairs. Frontal tubercles well developed and straight on the inner side. Antennae slender, with some moderately long stout hairs; the 3rd joint not imbricated, with about 8 sensoria; the 4th slightly imbricated, without sensoria; the relative length of joints as follows: III–53, IV–39, V–39, VI–85 (20+65).

Rostrum reaching beyond the middle coxae. Cornicles stout, not reaching the caudal apex, slightly expanded on the basal half, imbricated, and reticulated on the distal half. The 3rd oblique of fore wings nearly extending to the wing apex; hind wings with 2 obliques nearly parallel; hooklets 3.

Cauda a little shorter than the cornicle, furnished with about 6 pairs of lateral bristles. Legs long and slender, with many rather long bristles; tarsus imbricated.

Length of body—1.5 mm.	Antenna—1.6 mm.
Cornicle—0.3 mm.	Fore wing—1.75 mm.

Host.—*Artemisia capillaris.*

Distribution.—Formosa (Taihoku, Giran, Kagi, Ako).

This new species may be distinguished from *M. artemisiae* (**Pass.**) by the colour of the body.

The winged form is not rare. The sexual forms do not appear through the year near Taihoku.

This species and *Macrosiphum neoartemisiae Tak.* are sometimes found together on the host plant.

Macrosiphoniella sanborni (**Gillette**).

Macrosiphum chrysanthemi, **Sanborn,** Kansas Univ. Science Bull. iii, i, p. 73, pl. xvii, fig. 85 (1904).

Macrosiphum sanborni, **Gillette,** Canad. Ent. L, p. 65 (1908); **Fullaway,** Ann. Rept. Hawaii Agr. Expt. St. for 1909, p. 26 (1910); **Gillette,** Jour. Econ. Entom., iv, p. 385 (1911); **Das,** Mem. Ind. Mus. vi, 4, p. 163, pl. xi (1918).

Macrosiphoniella chrysanthemi, **Del Guercio,** Redia, vii, p. 332, fig. 30 (1911); **Theobald,** Bull. Ent. Research, vi, pt. 2, p. 112 (1915).

Macrosiphoniella bedfordi, **Theobald,** Bull. Ent. Res., iv, p. 318, fig. 4 (1914).

Macrosiphoniella sanborni, **van der Goot,** Contrib. Fauna Ind. Neerland. i, iii, p. 36 (1917).

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Hosts.—*Chrysanthemum* spp.

Distribution.—Formosa (Taihoku); Japan (Tokyo). India (Das); Java (v. d. G.); Hawaii (Fullaway); Africa (Theobald); Europe, North America.

Macrosiphoniella tanacetarium **(Koch).**

(PL. IX, 2, Figs. 1–5).

Siphonophora tanacetarium, **Koch,** Die Pflanzl. p. 187, figs. 257–258 (1857).

Macrosiphum tanacetarium, **van der Goot,** Beiträge Kenntnis. Holland. Blattl. p. 95 (1915).

Host.—*Artemisia vulgaris.*

Distribution.—Formosa (Taihoku Urai); Europe.

Hitherto unrecorded from Formosa.

Key to species of *Myzus.*

(1) Cornicles provided with some prominent hairs. ... ... *M. polygoniformosanus* n. sp.

— Cornicles not provided with hairs. ... ...(2)

(2) General colour green. ... ... *M. persicae* **(Sulz.)**

— General colour dark brown. ... ... *M. arthraxoni* n. sp.

— General colour white or pale yellow. ... ...(3)

— General colour yellow or orange ... ...(4)

(3) Body of the wingless viviparous female with many prominent capitate hairs. ... ...*M. formosartemisiae* n. sp.

— Body of the wingless viviparous female without prominent hairs. ... ...*M. hemerocallis* n. sp.

(4) Cornicles reaching the caudal apex. ... *M. woodwardiae* n. sp.

— Cornicles not reaching the caudal apex. *M. polypodiacicola* n. sp.

Myzus polygoniformosanus n. sp. (PL. XIV, 1, Figs. 1–3).

Wingless viviparous female.

Yellowish brown. Eyes red. Antennae pale brown, apex of the 5th joint, and the 6th black. Cornicles yellowish brown. Cauda yellow. Legs pale brown; apices of tibiae, and tarsi black.

Body broad, with a few very small capitate hairs. Head with some capitate and normal hairs. Frontal tubercles large, with a small blunt tubercle on the inner side. The 1st antennal joint much longer than the frontal tubercle, with a few short capitate hairs and a small blunt tubercle on the inner side; the 3rd joint imbricated, nearly without hairs, lacking sensoria; the 5th joint with a small apical sensoria; the relative length of joints as follows: III–53, IV–33, V–30, VI–89 (15+74). Eyes small. Rostrum reaching beyond the middle coxae.

Abdomen with a small lateral tubercle on the 7th segment. Cornicles reaching beyond the caudal apex, dilated at the base, slightly swollen near the apex, with many long, prominent capitate hairs mostly on the basal half. Cauda large, much longer than wide, somewhat constricted at the base, gradually narrowed towards the apex where it is rounded, with 5 pairs of long lateral bristles. Anal plate with many long normal bristles. Legs long and slender, with many normal and capitate hairs.

Length of body—1.8 mm. Antenna—1.5 mm.

Cornicle—0.4 mm.

Host.—*Polygonum perfoliatus ;* Lonicera japonica.

Distribution.—Formosa (Taihoku, Kagi).

Collected by Mr. E. Kurosawa.

The species described above is distinct from all the species of *Myzus* known to me by the prominent capitate hairs on the cornicles.

Myzus persicae (**Sulz.**)

Aphis persicae, **Sulze,** Kenn. Ins. p. 105 (1761).

Aphis dianthi, **Kaltenbach,** Mon. Pflanz. p. 42 (1843).

Rhopalosiphum dianthi, **Koch,** Die Pflanz. p. 42 (1857); **Sanborn,** Kansas Univ. Sc. Bull. iii, No. 1, p. 66, pl. ix, fig. 55 (1904); **Theobald,** Bull. Entom. Research, iv, p. 320 (1914).

Myzus malvae, **Oestland,** Geol. Nat. Hist. Survey Minnesota, p. 31 (1886).

Rhopalosiphum persicae, **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt 6, p. 362 (1917); **Kuwana** and **Essig,** Proc. Calif. Acad. Sc. 4th S., viii, 3, p. 64 (1918); **Swain,** Univ. Calif. Pub. Tech. Bull. Coll. Agr. Agr. Expt. St. iii, 1, p. 85 (1919).

Myzus persicae, **Buckton,** Monog. Brit. Aphid, i, p. 178 (1876); **Thomas,** Illinois St. Lab. Nat. Hist., p. 9 (1878); **Taylor,** Jour. Econ. Ent. i, p. 83 (1908); **Gillette** and **Taylor,** Bull. 133 and 134, Colorado Agr. Expt. St. (1908); **Gillette,** Jour. Econ. Entom. i, pl. 8, p. 359 (1908); **Fullaway,** Ann. Rept. Agr. Expt. St. Hawaii p. 28 (1910); **Gillette,** Jour. Econ. Entom. iv, p. 381 (1911); **Patch,** Maine Agr. Expt. St. Bull. 233, p. 260 (1914); **Maki,** Agr. Expt. St. Formosa, Bull. 103 (1916); **Das,** Memoirs Ind. Mus. vi, p. 166, pl. xviii, figs. 5-12 (1918).

Myzoides persicae, **van der Goot,** Tijdschrift Entom. p. 84 (1913), Beiträge Kenntnis Holland Blattl., p. 170 (1915) and Contrib. Fauna Ind. Neerland., i, iii, p. 48 (1917).

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Hosts.—*Durranta* sp.; *Capsella sp.; Raphanus sativus; Brassica; Papaver somniferum; Solanum melongena; Pisum sativum; Chenopodium album; Ipomaea batatas; Prunus persica; Stellaria aquatica; Acer sp.; Chrysanthemun sp.; Nicotiana tabacum; Lactuca oldhami; Psidium guyava.*

Distribution.—Formosa (Taihoku, Kagi, Taichyu), Japan (Tokio, Sapporo).

Java (v. d. G.); India (Das); Hawaii (Fullaway); Africa (Theobald); Europe; North America.

Dr. Shiraki collected numerous winged viviparous females in the islands of Boko near Formosa in April 1920.

The species is one of the most injurious pests in our island.

Myzus woodwardiae n. sp. (PL. II, 1, Figs. 6–9).

Wingless viviparous female.

Orange yellow or yellow, with many minute grey spots on the dorsum. Antennae pale brown, apical halves of the 3rd, 4th and 5th joints and the 6th black. Legs pale brown, excepting the distal half of femur, apex of tibia, and tarsi black. Cauda yellow. Cornicles black.

Body oval, broadest at the middle of the abdomen, with many long capitate hairs. Eyes large. Frontal tubercles large, the inner side distinctly convex. Antennae with some setae and short capitate hairs; the 3rd joint lacking sensoria; the 4th slightly imbricated; the 5th with a very small apical sensoria; the relative length of joints as follows: III–85, IV–66, V–51, VI–90 (13+77). Rostrum short, reaching the base of the middle legs. Body without lateral tubercles. Cornicles cylindrical, imbricated, very long, reaching the caudal apex, broadest at the base, reticulated on the apical area. Cauda very small, narrowed at the base and broadened at the middle, with a few short hairs. Legs very long and slender, with numerous moderately long setae.

Length of body—3.0 mm. Antenna—3.5 mm.
Cornicle—1.0 mm.

Winged viviparous female.

Very beautiful. Head, antennae, mesothorax, cornicles and cauda black. Eyes dark brown. Pronotum blackish.

Abdomen orange yellow, with some small black spots on the basal half of the dorsum, 4 black bands on the hind half, 4 rather large black patches on each side in front of the cornicle and one large black patch behind the base of the cornicle.

Femora mostly black, with the bases brownish; tibiae dark brown, with the apices black; tarsi black. Stigma and veins gray.

Body with many prominent capitate hairs. Frontal tubercles conspicuous, much shorter than the 1st antennal joint, with the inner side moderately convex. Antennae very long and slender, with some moderately long capitate hairs; the 1st joint much larger than the 2nd, with some capitate hairs; the 3rd joint with 20–23 circular sensoria of rather small size almost in one row over the whole length; the 4th joint imbricated, with 12 sensoria of mostly small size in one row over the whole length; the 5th joint with an apical sensoria; the relative length of joints as follows: III–100, IV–84, V–85, VI–115 (15+100). Rostrum slender, reaching the hind legs. Cornicles very long and slender, reaching far beyond the caudal apex, a little shorter than the 3rd antennal joint, cylindrical, broadest at the base, very slightly tapering, imbricated, reticulated on the apical area.

Wing-veins normal; hind wings with 2 parallel obliques; hooklets 5. Legs very long and slender, with many stout setae, some of which are slightly knobbed. Cauda small, broadened at the basal half, longer than wide, with 3 pairs of long lateral hairs.

Length of body—2.7 mm. Antenna—3.7 mm.
Fore wing—4.5 mm. Cornicle—0.8 mm.

Hosts.—*Woodwardia spp.; Polysticum sp.*

Distribution.—Formosa (Taihoku, Kwannonzan).

This plant louse is rather rare near Taihoku, the winged form occurring only in the winter.

Myzus polypodiacicola n. sp. (PL. II, 1, Figs. 1–5).

Wingless viviparous female.

Yellow. Eyes, cornicles and cauda black. The 3rd antennal joint yellowish brown, with the apex black; the 4th and the following

joints black. Legs pale brown; apices of femora and tibiae, as well as tarsi, black.

Body oval, broadest opposite midlength of the abdomen, furnished with a few short capitate hairs.

Head with a few capitate hairs which are a little longer than those on the abdomen. Frontal tubercles prominent, with the inner side somewhat convex. Antennae very long, imbricated, with some short capitate hairs; the 3rd joint lacking sensoria; apical sensoria of the 5th joint very small; the relative length of joints as follows: III–82, IV–64, V–44, VI–121 (15+106).

Rostrum stout, reaching the middle coxae. Body lacking lateral tubercles. Cornicles long, imbricated, not reaching the caudal apex, broadest at the base, reticulated on the apical area. Cauda very small, with a few long hairs.

Legs very long and slender, with some short somewhat knobbed setae.

Length of body—2.0 mm. Antenna—2.5 mm.
Cornicle—0.45 mm.

Host.—A plant of the *Polypodiaceae.*

Distribution.—Formosa (Taihoku).

This new aphis appears to be rather rare, since I have collected only four wingless viviparous females in Taihoku during the season of 1920.

Myzus arthraxoni n. sp.
Wingless viviparous female.

Shining dark brown. Head yellowish brown. Eyes dark red. The 1st and 2nd antennal joints pale yellow; the 3rd joint mostly pale yellow, with the apex black; the 4th and 5th joints black; the 6th joint black, with the spur sometimes pale yellow. Cornicles pale yellow, with the bases and apices dusky. Cauda yellow. Legs pale brown, apices of tibiae, and the tarsi pale dusky.

Body oval, not strongly convex, without hairs. Head lacking hairs. Frontal tubercles very short, much shorter than the 2nd antennal joint, on the inner side moderately convex. Antennae long and slender, somewhat imbricated, lacking hairs; the 1st joint very large, much larger than the 2nd, somewhat convex on the inner side; the 3rd joint lacking sensoria; the 5th joint with a very small apical sensoria; the relative length of joints as follows: III–35, IV–26, V–22, VI–63 (11+52). Rostrum very stout, not reaching the middle legs. Body lacking lateral tubercles. Cornicles cylindrical, slender, reaching near the caudal apex, slightly imbricated, broadest at the base, somewhat tapering, without a reticulation. Cauda much shorter than the cornicle, much longer than wide, gradually tapering, with a slight constriction about the middle.

Legs long and slender, with some short setae; tarsi normal.

Length of body—1.6 mm. Antenna—1.7 mm.
Cornicle—0.3 mm.

Winged viviparous female.

Head blackish. Eyes, antennae, thorax and cornicles black. Abdomen yellow, with some small black spots and patches on the dorsum of the basal segments, 4 large black patches on the side and a very large black patch between the cornicles. Stigma gray; wings along the veins narrowly clouded with fuscous. Cauda yellow. Legs pale brown; apices of femora and tibiae, and tarsi black.

Head with a few very short stout hairs. Frontal tubercles very short, somewhat convex on the inner side. Antennae long and slender, imbricated, without hairs; the 1st joint very large, much larger than the 2nd, somewhat convex on the inner side; the 3rd joint with about 18 very small circular sensoria scattered over the whole length; the 4th joint with 2 or 3 very small sensoria at the middle; the 5th joint with a very small apical sensoria; the relative length of joints as follows: III–44, IV–31, V–25, VI–61 (11+50).

Rostrum very short, reaching a little beyond the front legs. Wings with the stigmatic vein somewhat strongly curved; subcosta with about 4 circular sensoria; the 1st oblique almost straight, the 3rd oblique twice forked, the upper branch not united with the stigmatic vein, reaching the wing apex; hind wings with 2 almost parallel obliques; hooklets 2.

Cornicles cylindrical, slender, not reaching the cauda, imbricated, about 5 times as long as wide at the base, broadest at the base, very slightly tapering. Cauda longer than wide, as long as half the cornicle, broadest at the base, tapering, slightly constricted about the middle, with 3 pairs of lateral bristles.

Length of body—1.7 mm. Antenna—1.7 mm.
Fore wing—2.5 mm. Cornicle—0.2 mm.

Host.—*Arthraxon ciliaris.*

Distribution.—Formosa (Taihoku).

Collected by Mr. E. Kurosawa.

Myzus hemerocallis n. sp.

Wingless viviparous female.

Pale yellowish green or white. Eyes black. Antennae pale green, with the last joint dusky. Cornicles pale green, at the apex very slightly dusky. Cauda pale green. Legs pale green, tarsi dusky. Body oval, almost lacking hairs. Frontal tubercles short, but very strongly convex on the inner side. Antennae rather stout, imbricated, without hairs; the 1st joint a little larger than the 2nd, somewhat angulated on the inner side; the 3rd joint lacking sensoria; the relative length of joints as follows: III–29, IV–16, V–13, VI–42 (12+30). Rostrum reaching a little beyond the middle legs. Cornicles imbricated, somewhat dilated at the base, very slightly swollen on the distal half, as long as the last antennal joint, 4.5 times as long as wide, longer than twice the cauda, reaching the caudal apex. Cauda $\frac{3}{4}$ times as long as wide, a little longer than the hind

tarsi, with 2 very slight constrictions, provided with 2 pairs of lateral bristles. Legs rather stout, with some moderately long setae.

Length of body—1.5 mm. Antenna—0.85 mm.
Cornicle—0.35 mm.

Winged viviparous female.

Pale yellowish green. Eyes black. Head and antennae black. Mesothorax blackish. Cornicles pale brown. Legs pale brown, apices of tibiae and tarsi black. Cauda pale green. Wings hyaline; stigma pale gray; veins pale brown.

Head with some very short stout hairs. Frontal tubercles as in the wingless form. Antennae imbricated, lacking hairs; the 3rd joint provided with 6–8 circular sensoria of median size in a row on the middle portion; the 4th joint lacking sensoria; the relative length of joints as follows: III–58, IV–30, V–20, VI–54 (11+43). Rostrum reaching the middle coxae. Wings normal; the 2nd branch of the 3rd oblique rather short; hind wings with 2 obliques; hooklets 3.

Cornicles almost as in the wingless form, a little shorter than the spur of the last antennal joint, about 4 times as long as wide.

Body—2.0 mm. Antenna—1.4 mm.
Cornicle—0.3 mm.

Host.—*Hemerocallis fulva.*

Distribution.—Formosa (Taihoku).

Collected by Mr. T. Abe.

Myzus formosartemisiae n. sp.

Wingless viviparous female.

White. Eyes black. Antennae, cornicles, cauda and legs white; tarsi slightly dusky.

Body elongate, soft, with numerous long capitate hairs. Head with 3 pairs of long capitate hairs arising from short tubercles between the frontal tubercles and 4 capitate hairs in a transverse row between

the eyes. Hairs on the front longer than others, as long as the 1st antennal joint. Eyes rather small, with small ocular tubercles. Frontal tubercles short, with 2 capitate hairs on the inner side. Antennae very long and slender; the 1st joint larger than the 2nd, strongly angulated near the apex on the inner side, with 2 short capitate hairs which are shorter than those on the head; the 2nd joint with a few short capitate hairs; the 3rd joint lacking sensoria, with 2 very short capitate hairs; the 4th joint very slightly imbricated, with or without a short capitate hair; the relative length of joints as follows: III–48, IV–34, V–39, VI– (12+96). Rostrum reaching the middle coxae. Cornicles cylindrical, very long and slender, reaching the caudal apex, almost as long as the 4th and 5th antennal joints taken together, somewhat imbricated, somewhat broadened at the base. Cauda stout, with 2 pairs of lateral bristles. Legs slender; tibiae provided with a few capitate and some normal hairs.

Length of body—1.8 mm. Antenna—1.75 mm.
Cornicle—0.5 mm.

Winged viviparous female.

Pale yellow. Mesothorax yellow. Antennae, cornicles, cauda and legs white. Wings hyaline; stigma and veins pale. Body with some very short capitate hairs. Frontal tubercles short, somewhat convex on the inner side.

Antennae long and slender, with a few very short capitate hairs; the 1st joint larger than the 2nd, angulated on the inner side; the 3rd joint somewhat imbricated, with about 10–12 circular sensoria not in a row almost over the whole length; the 4th joint with 7 sensoria in a row over the whole length; the 5th joint with an apical sensoria; the relative length of joints as follows: III–46, IV–42, V–38, VI– (11+91). Eyes not large, with very small ocular tubercles. Rostrum reaching the middle coxae. Wings normal; hind wings with 2 parallel obliques; hooklets 3. Cornicles cylindrical, very long and slender,

reaching near the caudal apex, longer than the 3rd antennal joint, slightly broadened at the base. Cauda stout, broadest at the base, tapering, without constrictions, with 2 pairs of stout lateral bristles. Legs very long and slender, tibiae provided with many setae, a few of which are knobbed.

Length of body—1.7 mm. Antenna—1.7 mm.

Cornicle—0.22 mm.

Host.—*Artemisia vulgaris, var indica.*

Distribution.—Formosa (Taihoku).

Collected by Mr. Sueta.

This new species is very closely related to *Capitophorus chrysanthemi* Theob. from Africa, but differs from the latter in lacking a tubercle above the cauda of the wingless viviparous female.

Phorodon humuli (**Schrank**). (PL. XIV, 1, Fig. 4).

Aphis humuli, **Schrank,** Faun. Boic. ii, p. 110 (1801).

Phorodon humuli, **Buckton,** Monog. Br. Aphid., i, p. 166 (1875); **Thomas,** Nat. Hist. Illinois, Bull. ii, p. 9 (1878); **Riley,** Insect Life, p. 70 (1888); **Remisch,** Zeitschr. f. Insekt. Biol., p. 241 (1911); **van der Goot,** Holand. Blattl. p. 132 (1915); **Matsumura,** Jl. Coll. Agr. Sapporo, p. 362 (1917); **Swain,** Univ. California, Tech. Bull. iii, 3, p. 79 (1919).

Phorodon cannabis, **Das,** Mem. Indian Mus. vi, p. 169 (1918).

Host.—*Humulus japonicum.*

Distribution.—Formosa (Taihoku); Japan (Tokio). India (Das); North America; Europe.

Hitherto unrecorded from Formosa.

Collected by Mr. Kurosawa in March 1921.

Key to Formosan species of *Amphorophora.*

(1) General colour orange, cornicles black. Winged females without sensoria on the 4th antennal joint. ... *A. indicum* (**v. d. Goot**).

General colour green, cornicles green. Winged females provided with about 20 sensoria on the 4th antennal joint. ... ... *A. oleraceae* (**v. d. Goot.**)

Amphorophora oleraceae (**v. d. Goot**).

Rhopalosiphum oleraceae, **v. d. Goot,** Contrib. Fauna Indes Neerland. vol. 1, Fasc. iii, p. 40 (1917).

Rhopalosiphum lactucae, **Maki,** Bull. Agr. Expt. St. Formosa, No. 103, p. 22 (1913).

Hosts.—*Lactuca debilis ; Sonchus sp.*

Distribution.—Formosa (Taihoku, Kannonzan); Java (v. d. G.).

Hitherto unrecorded from Japan.

The Formosan specimens agree so well with the original description that I have no hesitancy in so designating them.

Amphorophora indicum (**v. d. Goot.**)

Rhopalosiphum indicum, **v. d. Goot,** Records of Indian Mus. xii, pt. i, No. 1, p. 1 (1916); **Essig** and **Kuwana,** Proc. California Acad. Sciences, 4th ser. vol. viii, No. 3, p. 55 (1918).

Rhopalosiphum miniatum, **Matsumura,** Trans. Sapporo Nat. Hist. Soc. vol. vii, pt. i, p. 12 (1918).

Host.—unknown in Formosa.

Distribution.—India (v. d. Goot); Japan (Tokio, Hokkaido); Formosa (Arisan).

Collected by Messrs. Sonan and Yoshino in Oct. 1918.

Hitherto unrecorded from Formosa.

Near Tokio this plant louse is found on the twigs of *Euscaphis japonica* and *Staphylea bumalda.* The winged viviparous females appear only in the 2nd, 3rd and 4th generations.

The males are winged or wingless and many immediates also occur.

Subtribe *Pentalonini.*

(1) Stigmatic vein strongly curved. ... ...*Fullawayella* **Del Guer.**
Stigmatic vein fused with the upper branch of the 3rd oblique, ... forming a closed cell. ... ... *Pentalonia* **Coq.**

Fullawayella violae **Pergande.**

Rhopalosiphum violae, **Pergande,** Canad. Ent. xxxii, p. 29 (1900); **Sanborn,** Kansas Univ. Sc. Bull. iii, No. 1, p. 64 (1904); **Essig,** Pom. Jl. Ent. vol. i, p. 4 (1909); **Davidson,** Jl. Econ. Ent. ii, p. 303 (1909) and ibid. iii, p. 277 (1910); **Swain,** Univ. Calif. Pub. Ent. iii, No. 1, p. 86 (1919).

Neotoxoptera violae, **Theobald,** Bull. Ent. Research, vi, pt. ii, p. 131 (1915).

Fullawayella violae, **Baker,** Bull. Ent. Research, x, pt. 1, p. 46 (1919).

Host.—*Viola* sp.

Distribution.—Formosa (Taihoku).

North America; Africa (Theobald).

Hitherto unrecorded from Japan.

A few wingless viviparous females have been collected by the author.

In my opinion *Phorodon violae* Theobald from Africa (Bull. Ent. Research, p. 68, 1920) is closely related to this species.

Fullawayella formosanus n. sp. (PL. iii, 2, Figs. 1–5).

Winged viviparous female.

Described from a specimen preserved in alcohol.

Yellowish brown. Antennae, legs, cornicles and cauda pale brown. Wings along the veins broadly clouded with fuscous, veins and stigma brown.

Body oblong, with a few short hairs. Frontal tubercles conspicuous, the inner sides prominently converging. Antennae with a

few minute hairs; the 3rd joint with about 35, the 4th 20, the 5th 6 circular sensoria scattered over the whole length; the 5th slightly imbricated, the apical sensoria very large; the relative length of joints as follows: III–92, IV–70, V–58, VI–? (26+?). Stigmatic vein strongly curved; obliques on the hind wing somewhat divergent; hooklets 5.

Cornicles conspicuously dilated on the distal half. Cauda broad, rounded at the apex.

Length of body—2.0 mm. Antenna—?

Fore wing—3.3 mm. Width of fore wing—1.2 mm.

Host.—*Allium scorodoprasum, var viviparum.*

Collected by Messrs. M. Maki and J. Sonan.

Distribution.—Formosa (Taihoku; Toyen).

Pentalonia nigronervosa **Coq.**

Coquerel, Ann. Ent. Soc. France, vii, p. 279 (1859); **Wilson,** Jour. Econ. Ent., ii, p. 346 (1909); **Fullaway,** Ann. Rept. Hawaii Agr. Exp. St. p. 29 (1910); **Baker,** Bull. Ent. Research, p. 45 (1919); **Swain,** Univ. Calif. Pub., iii, p. 78 (1919).

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Hosts.—*Musa spp.*

Distribution.—Formosa; Hawaii (Fullaway); North America.

The species is very common in Taihoku and the winged viviparous females are found at almost all times.

Subtribe *Vesiculaphidini* new subtribe.

Vesiculaphis caricis **(Fullaway).** (PL. iv, 1 and PL. x, 1, Fig. 5).

Toxoptera caricis, **Fullaway,** Ann. Rept. Hawaii Agr. Expt. St. for 1909, p. 32 (1910).

Vesiculaphis caricis, **Del Guercio,** Redia, v. 7, p. 464 (1911).

Described from specimens preserved in alcohol.

Wingless viviparous female.

Yellow. Antennae, cornicles, cauda and legs concolourous with the body. Eyes dark red. Body elongated and somewhat flattened, without prominent hairs. Head large and flat, peculiar in shape, the top forming a ledge which extends out over the antennae; a very small blunt tubercle present in front of the eyes. Antennae very short, without hairs, arising from the underside of the head, 5-jointed; the 3rd joint lacking sensoria; the relative length of joints as follows: III–21, IV–7, V–20 (9+11). Eyes small; ocular tubercles distinct, but very small. Rostrum short, not reaching the middle coxae. Head and prothorax very distinctly defined. Prothorax nearly as long as the head, without lateral tubercles. Abdomen broadest at midlength, without tubercles. Cornicles projecting horizontally behind, reaching the caudal apex. Cauda triangular, when seen from above, slightly curved upwards and furnished with a few rather short hairs. Anal plate large, reaching the caudal apex, semicircular, the posterior margin rounded. Legs short, with a few setae.

Length of body—1.7 mm. Antenna—0.5 mm.

Winged viviparous female.

Antennae, cornicles, cauda and legs yellowish brown. Head dark brown. Mesothorax black; abdomen yellowish brown. Wings hyaline, stigma and veins pale yellow.

Body elongate, without hairs. Eyes large, with prominent ocular tubercles. Frontal tubercles very short.

Antennae without hairs; arising from the underside of the head; the 1st joint much larger than the 2nd; the 3rd with 35, the 4th 15, the 5th 6 large sensoria on the whole length; secondary sensoria slightly narrowed transversely; the relative length of joints as follows: III–47, IV–25, V–23, VI–52 (19+33). Rostrum not reaching the middle coxae. Body without lateral tubercles. Obliques on the hind

wings nearly parallel; hooklets 3; the 3rd oblique on the fore wing only once forked. Cornicles long and slender, reaching the cauda, somewhat dilated near the apex, somewhat imbricated. Cauda wedge-shaped, not sharply pointed, projecting a little beyond the anal plate, provided with 2 pairs of rather short fine hairs. Anal plate similar to that of the wingless female. Legs slender, moderately long; with a few setae.

Length of body—1.7 mm. Antenna—1.2 mm.
Cornicle—0.3 mm. Fore wing—2.55 mm.
Width of fore wing—1.15 mm.

Host.—*Cyperus rotundus.* Collected by Mr. M. Maki.

Distribution.—Formosa (Taihoku).
Hawaii (Fullaway).

The specimens described above slightly differs from Fullaway's specimens in having more sensoria on the antennae.

Subtribe *Aphidini.*

(1) Cornicles very short, almost wider than long. ... ...(9)
Cornicles not very short, longer than wide. ... ...(2)
(2) Cornicles swollen, not cylindrical. ... ...(3)
Cornicles scarcely swollen, cylindrical or tapering. ... ...(7)
(3) Abdomen above the cauda with a projection. *Cavariella* **Del Guer.**
Abdomen above the cauda without a projection. ... ...(4)
(4) Antennae 5-jointed. ... ... *Yamataphis* **Mats.**
Antennae 6-jointed. ... ...(5)
(5) Cornicles longer than the cauda. ... ... *Rhopalosiphum* **Koch.**
Cornicles as long as or shorter than the cauda. ... ...(6)
(6) Cauda short and abruptly conical. ... ... *Brevicoryne* **Das.**
Cauda long, not abruptly conical. ... ... *Hyalopterus* **Koch.**
(7) The 3rd oblique once forked. ... ... *Toxoptera* **Koch.**
The 3rd oblique twice forked. ... ...(8)

(8) Cauda abruptly conical. ... ...*Anuraphis* **Del Guer.**
— Cauda not abruptly conical. ... ... *Aphis* **L.**
(9) Cornicles somewhat swollen. ... ... *Brachycolus* **Buckt.**
— Cornicles not swollen ... ... *Brachysiphoniella* n.g.

Key to Formosan species of *Rhopalosiphum.*

(1) The 4th antennal joint with no or 1–2 sensoria. *R. nymphaeae* (**L.**)
The 4th antennal joint with 6–10 sensoria. ... ... (2)
(2) Rostrum reaching the middle coxae. ... ... (3)
Rostrum not reaching the middle caxae. ... *R. papaveri* n. sp.
(3) Wingless viviparous females with some very short capitate hairs.
... ... *R. lahorensis* (**Das.**)
Wingless viviparous females without capitate hairs. ... ...
... ... *R. pseudobrassicae* (**Davis.**)

Rhopalosiphum pseudobrassicae (**Davis.**)

Aphis pseudobrassicae, **Davis,** Canad. Ent., xlvi, p. 231 (1914); **Maki,** Agr. Exp. St. Formosa, Bull. 103 (1917); **Swain,** Univ. Calif. Pub. tech. Bull. Coll. Agr. Expt. St. vol. 3, No. 1, p. 122 (1919).

Siphocoryne pseudobrassicae, **van der Goot,** Contrib. Fauna Ind. Neerland. i, iii, p. 64 (1917); **Theobald,** Bull. Entom. Research, viii, p. 289 (1918).

Siphocoryne indobrassicae, **Das,** Memoirs Ind. Mus., vi, p. 188 (1918).

Hosts.—*Raphanus*; *Brassica spp*; *Ranunculus sceleratus; Capsella bursa-pastoris.*

Distribution.—Formosa (Taihoku); Japan.
Java (v.d.G.); India (Das); Africa (Theobald, Davis); North America.

Dr. Shiraki collected some winged and wingless females in the islands of Boko, Formosa, in April 1920.

Rhopalosiphum nymphaeae (**L.**)

Aphis nymphaeae, **Linnaeus,** Syst. Nat., ii, p. 714 (1767), and Fn. Suec., p. 983 (1789); **Kaltenbach,** Mono. Pflanz., p. 104 (1843).

Aphis plantarum aquaticum, **Fabricius,** Ent. Syst., iv, p. 214 (1794).

Aphis aquatica, **Jackson,** Ohio Naturalist, viii, p. 243 (1907).

Rhopalosiphum nymphaeae, **Koch,** Die Pflanz., p. 44, fig. 57 (1857); **Buckton,** Mono. Brit. Aphid., ii, p. 12, pl. xli (1877); **Cockerell,** Science, xxii, p. 764 (1905); **Davis,** Entom. News, xxi, p. 245 (1910); **Theobald,** Entomologist, xliv, p. 18 (1911); **Patch,** Maine Agr. Expt. St. Bull. 202, p. 171 (1912), and Science, xlii, No. 1074, p. 164 (1915); **Davidson,** Jour. Econ. Entom. x, p. 350 (1917); **Essig and Kuwana,** Proc. Calif. Ac. Sc. 4th series, viii, 3, p. 62 (1918).

Siphocoryne nymphaeae, **Theobald,** Bull. Ent. Res., vi, p. 118 (1915); **Das,** Mem. Ind. Mus., vi, p. 191 (1918); Matsumura, Jour. Coll. Agr. Sapporo. vii. pt. 6, p. 359 (1917); **Swain,** Univ. Calif. Pub. Tech. Bull. iii, i, p. 133 (1919).

Siphonaphis nymphaeae, **van der Goot,** Kenntnis Holand. Blattl. p. 239 (1915), and Contrib. Fauna Ind. Neerland., i, iii, p. 69 (1917).

Hosts.—*Nymphaea sp ; Pistia stratiotes; Prunus communis; Nelumlo nucifera.*

Distribution.—Formosa (Taihoku); Japan (Tokio, Sapporo). Java (v.d.G.); India (Das); Africa (Theobald); Europe; North America.

Hitherto unrecorded from Formosa.

R. nymphaeae, in Formosa, lives on various aquatic plants through the year and is very rarely found on *Prunus*, although in the temperate country it is common on various aquatic plants during the summer and spends the winter on *Prunus sp.* The species is viviparous through the year in Formosa.

Rhopalosiphum paparveri n. sp. (PL. xiii, 1, figs. 1–8)

Described from specimens preserved in alcohol.

Wingless viviparous female.

Dirty yellow. Eyes red. Antennae dirty yellow, with the distal half dusky. Cauda paler. Cornicles paler, dusky at the apices. Legs paler; apices of tibiae dark brown; tarsi black. Anal plate dusky.

Body oval, rather wide; broadest at midlength of the abdomen, without hairs. Head small and very short, with a few short slightly capitate hairs. Eyes small; ocular tubercles small. Frontal tubercles short, with the inner side convex. Antennae short, imbricated, without hairs; the 3rd joint without sensorir; apical sensorie of the 5th joint not large; the relative length of joints as follows: III—59, IV—28, V—25, VI—58 (17+41). Rostrum short, not reaching the middle coxae. Prothorax with a small lateral tubercle. Cornicles imbricated, a little longer than the cauda, but not reaching the cauda, expanded at the base and slightly dilated at the apex. Cauda wedge-shoped, longer than wide, with 3 pairs of very short lateral bristles. Legs slender, with some setae.

Length of body—2.5 mm. Antenna—1.4 mm.
Cornicle—0.35 mm.

Winged viviparous female.

Antennae, eyes and mesothorax black. Abdomen dirty yellow, with many small grey patches and spots on the dorsum. Wings along the veins slightly fuscous clouded; stigma and veins grey. Femora black except the pale brown base, tibiae pale brown, with the apices black; tarsi black. Caude blackish, paler at the base. Cornicles pale blackish brown. Body oblong, without hairs. Frontal tubercles very short, slightly convex on the inner side. Antennae short, imbricated, without hairs; the 3rd joint with about 30, the 4th 13, the 5th 1 sensoria irregularly scattered over the whole length; the relative length of joints as follows: III—52, IV—33, V—28, VI—67 (20+47). Rostrum not reaching the middle coxae. The 3rd oblique of fore wings twice forked, the 1st fork extending to the wing apex, the 2nd short; hind wings with 2 obliques nearly parallel; hooklets 3. Legs slender, with some moderately long setae; tarsi slender and imbricated. Cornicles similar to those of the wingless females but shorter. Cauda shorter than the cornicle, expanded on the basal half, with 2 pairs of

lateral bristles.

Length of body—2. mm. Antenna—1.4 mm.
Fore wing—2.6 mm. Width of fore wing—1.0mm.
Cornicle—about 0.23 mm.

Host.—*Papaver somniferum*, attacking the leaf.

Distribution.—Formosa (Ako, Kagi).

In Formosa *Myzus persicae* (Sulz.), *Rhopalosiphum papaveri* n. sp.; *Yamataphis papaveri* n. sp. and *Aphis gossypii* Glov. are found on *Papaver somniferum*, one of the most important cultivated plants in Formosa.

Rhopalosiphum papaveri sometimes occurs very abundantly on the leaves and stems.

Rhopalosiphum lahorensis (**Das.**)

Stephenosia lahorensis, **Das,** Memoirs Indian Mus. vi, 175 (1918).

Host.—*Artemisia vulgaris, var. indica ; Siegesbeckia orientalis ?*

Distribution.—Formosa (Taihoku); India (Das).

Collected by Mr. Sueta.

Hitherto unrecorded from Formosa.

The Formosan specimens exactly agree with Mr. Das's description and figures.

Key to Formosan species of *Cavariella.*

(1) Antennae 6-jointed... ... ... *C. bicaudata* (**Essig** et **Kuw.**)
Antennae 5-jointed... ... ... (2)
(2) Milk white. ... ... *C. araliae* n. sp.
Green. ... ... *C. neocaprae* n. sp.

Cavariella bicaudata (**Essig** et **Kuw.**) (PL. ix, 1, figs. 1–9)

Siphocoryne bicaudata, **Essig** and **Kuw.** Proc. Calif. Acad. Sc. 4th series, viii, No. 3, p. 64 (1918).

Host.—*Salix spp.*

Distribution.—Formosa (Taihoku); Japan (Tokio, Saitama).

Hitherto unrecorded from Formosa.

Cavariella araliae n. sp. (PL. xiii, 2, fig. 1)

Wingless viviparous female.

Milk white. Eyes red. Antennae white, with the last joint slightly dusky. Legs white, with the tarsi slightly dusky. Cornicles and cauda white.

Body oval, without hairs. Front rounded. Eyes rather small; ocular tubercles small. Frontal tubercles absent. Antennae short and slender, without hairs, 5-jointed; the 3rd joint without sensoria; the relative length of joints as follows : III—35, IV—11, V—27 (10+17). Rostrum reaching beyond the middle coxae. Body without lateral tubercles. Cornicles imbricated, slender, reaching a little beyond the caudal apex, somewhat dilated on the distal portion. Abdomen just above the cauda with a horn-like tubercle, which is a little shorter than the cornicle, reaching a little beyond the cornicle.

Cauda wedge-shaped and broad, with 2 slight constrictions, and 2 pairs of lateral bristles present. Legs moderately long, with some short setae; tarsi normal.

Length of body—1.7 mm. Antenna—0.7 mm.

Cornicle—0.3 mm.

Host.—*Aralia spinosa.*

Distribution—Formosa (Urai, Kwannonzan), Japan (Tokio)

This aphis was collected by the author on the young leaves of the host in January and February 1921.

Cavariella neocaprae n. sp. (PL. ix, 1, figs. 10–16).

Winged viviparous female.

Described from specimens preserved in alcohol.

Head and mesothorax blackish brown. Abdomen yellowish brown, with the middle part of the dorsum dark.

Eyes dark brown. Cornicles and cauda pale brown. Wings hyaline; veins and stigma pale brown. Legs yellowish brown; apices of tibiae dark.

Body oblong, without hairs. Eyes large. Frontal tubercles very short. Antennae very short, 5-jointed, without hairs; the 3rd joint with about 33 large sensoria scattered over the whole length; the 4th imbricated, with a very large sensoria at the apex; the relative length of joints as follows : III—41, IV—13, V—31 (12+19).

Rostrum reaching beyond the middle legs. Body wanting lateral tubercles. Obliques on the hind wing parallel; hooklets 4. Cornicles dilated on their distal halves. Abdomen just above the cauda with a distinct horn, which is rounded and provided with a pair of short bristles at the apex. Cauda dilated at the basal half, with 2 pairs of lateral bristles. Legs long and thin, with some setae.

Length of body—2.3 mm. Antenna—1.0 mm.
Cornicle—0.27 mm. Fore wing—3.1 mm.
Width of fore wing—1.2 mm.

Host—*Salix* sp.

Collected by Mr. M. Maki.

Distribution.—Formosa (Taihoku, Koheki).

This species is easily distinguished from *Cavariella caprae* (Fab.) by the 5-jointed antennae, and by the much longer tubercle on the dorsal surface of abdomen.

Brevicoryne brassicae (L.)

Aphis brassicae, **Linnaeus,** Syst. Nat. i, 2, p. 734 (1767) and Fn. Suec. p. 985 (1789); **Koch,** Die Pfl., p. 149, figs. 203—204 (1857); **Buckton,** Brit. Aphid. ii, p. 33 (1875); **Thomas,** Illinois St. Lab. Nat. Hist. Bull. 2, p. 12 (1878); **Oestland,** Geol. Nat. Hist. Survey Minnesota, p. 44 (1886), and Geol. Nat. Hist. Survey Minnesota, p. 57(1887); **Sanborn,** Kansas Univ. Sc, Bull. vol. iii, No. 1, p. 54, pl. x, fig. 61 (1904); **Fullaway,** Ann. Rept. Hawaii Agr. Expt. St. p. 40 (1910);

Essig, Pomona Juor. Ent., iii, p. 523 (1911); **Herrick,** Jour. Econ. Ent. iv. p. 219 (1911); **Theobald,** Bull. Ent. Res., iv, p. 320 (1914); **Maki,** Agr. Expt. St. Formosa, Bull. 103 (1916); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 356 (1917); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc., viii, 3, p. 68 (1918); **Swain,** Univ. Calif. Pub. iii, 1, p. 95 (1919).

Siphocoryne brassicae, **van der Goot,** Tijdschrift voor Entom. p. 93 (1913).

Brevicoryne brassicae, **van der Goot,** Beiträge Kenntnis Holland. Blattl. p. 246 (1915); **Das,** Menn. Ind. Mus. vi, p. 187 (1918); **Baker,** U. S, Dept Agr. Bull. 826. p. 45 (1920).

素本得一　農事試驗場特別報告（台北） No. 8, p. 110 **（大正二年）**

Hosts.—*Brassica* spp.

Distribution.—Formosa (Taihoku); Japan (Tokyo, Sapporo); India (Das and Lefroy); Hawaii (Fullway); Australia (Froggatt); Africa (Theobald); Europe; North America.

I have never seen this species from Formosa.

Yamataphis **Mats.**

Body with some stout hairs. Eyes with prominent ocular tubercles. Frontal tubercles very short. Antennae 5–jointed; spur longer than the base; sensoria normal in shape. Fore wings with the 3rd oblique twice forked; hind wings with 2 obliques. Abdomen without dorsal tubercles. Cornicles much longer than the cauda, somewhat swollen. Cauda wedge-shaped. Tarsi normal.

This genus may be distinguished from *Brevicoryne Das* by the 5–jointed antennae.

Type—*Yamataphis oryzae* **Mats.**

Yamataphis papaveri n. sp. (PL. xiii, 2, figs. 4–6)

Winged viviparous female.

Black. Eyes and antennae black. Wings hyaline, veins dark brown, stigma blackish. Cornicles and cauda blackish. Femora

black, tibiae brownish black.

Body with some moderately long stout hairs. Eyes large, ocular tubercles prominent. Frontal tubercles very short. Antennae very short and rather shout, 5-jointed, imbricated, with some moderately long stout hairs; the 3rd joint with about 18–23 circular sensoria of various size scattered over the whole length; the 4th joint with 2 rather small sensoria, the apical sensoria large; the relative length of joints as follows: III—51, IV—19, V—81 (10+71). Rostrum reaching the hind coxae. Prothorax and the 1st abdominal segment with a very small blunt tubercle on each side. Wings with normal veins, the 2nd fork of the 3rd oblique short; hind wings with 2 parallel obliques; hooklets 5.

Cornicles stout and rather short, not reaching the cauda, about 4 times as long as wide, somewhat swollen on the distal half and minutely imbricated. Cauda wedge-shaped, longer than wide, with 2 pairs of lateral bristles.

Legs moderatly long, with many setae.

Length of body—1.6 mm. Antenna—1.1 mm.
Fore wing—2.9 mm. Cornicle—1.7 mm.

Host. —*Papaver somniferum*, attacking the root.

Distribution.—Formosa (Toyohara)

This curious aphis has been collected by Mr. Okuni in December 1921.

Hyalopterus pruni (Fab.)

Aphis pruni, **Fabricius,** Ent. Syst. iv, p. 214 (1794).

Aphis arundinis, **Fabricius,** Ent. Syst. iv, p. 212 (1794).

Hyalopterus pruni, **Koch,** Pflanz. p. 21, figs. 27–30 (1857); **Buckton,** Mon. Brit. Aphid. ii, p. 110, pl. LXXV, figs. 1–3 (1877); **Theobald,** Bull. Ent. Research, iv, p. 331 (1914); **Patch,** Maine Agr. Expt. St. Bull. 233, 266 (1914); **van der Goot,** Beiträge Kenntnis Holland Blattl. p. 261 (1915), and Contrib. Fauna Ind. Neerland., i, iii, p. 125 (1917); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 358 (1918); **Das,**

Memoirs Ind. Mus., vi, p. 225 (1918); **Swain,** California Univ. Pub. tech. Bull. Coll. Agr. Agr. Expt. St. III, i, p. 130 (1919).

Hyalopterus arundinis, **Koch,** Die Pflanz. p. 21, f. 27–28 (1857); **Buckton,** Mon. Br. Aphid, ii, p. 111, pl. LXXV, figs. 4–5 (1877); **Oestland,** Geol. Nat. Hist. Survey, Minnesota. p. 48 (1887).

Host.—*Prunus sp*; *Phragmites sp.*

Distribution.—Formosa; Japan.

Java (v. d. G.); India (Das); Africa (Theobald); Europe; North America.

Hitherto unrecorded from Formosa.

The species, in the temperate country, feeds on *Phragmites sp.* and *Prunus sp.* during the summer and is found only on *Prunus sp.* during the winter, but in Formosa the aphis is found on *Phragmites sp.* and *Prunus sp.* through the year, without producing sexual forms.

Key to Formosan species of *Toxoptera*

(1) Winged viviparous females with 8—9 sensoria on the 3rd antennal joint. ... ... *T. leonurii* n. sp.
Winged viviparous females with 4–6 sensoria on the 3rd antennal joint. ... ... *T. aurantii* **(Boyer.)**

Toxoptera leonurii n. sp.

Wingless viviparous female

Dark green. Head, eyes, cornicles and anal plate black. Antennae pale brown, with the distal half black. Cauda blackish green. Legs pale brown; apices of femora dusky; apices of tibiae, and tarsi black.

Body oval, without hairs, very slightly pulverulent. Frontal tubercles very short. Antennae imbricated, without hairs; the 3rd joint lacking sensoria; the relative length of joints as follows: III—27, IV—20, V—16, VI—37 (10+27). Rostrum reaching beyond the middle coxae. Prothorax and the 1st and 7th abdominal segments

with a blunt lateral tubercle, of which those on the prothorax a little larger than those on the abdomen. Cornicles long, cylindrical, broadest at the base, gradually tapering, almost as long as or very slightly longer than the 3rd antennal joint, almost twice as long as the cauda, imbricated. Cauda normal, with some long lateral bristles. Legs stout, with many rather long setae.

Length of body—1.2 mm. Antenna—1.0 mm.
Cornicle—about 0.3 mm.

Winged viviparous female.

Colour almost as in the wingless form. Stigma gray. Body without hairs. Frontal tubercles very short. Antennae imbricated, without hairs; the 3rd joint with 8-9 circular sensoria of median and small size almost in one row; the 4th joint lacking sensoria; the relative length of joints as follows: III—29, IV—22, V—20, VI—40 (10 +30). Rostrum reaching the middle coxae. Prothorax and the 1st and 7th abdominal segments with a blunt, rather large tubercle on each side, of which those on the prothorax larger than those on the abdomen. Wings with the 3rd oblique once forked; hind wings with 2 parallel obliques; hooklets 2 or 3.

Cornicles not reaching the caudal apex; imbricated, broadest at the base, somewhat tapering. Cauda normal, with some long lateral bristles. Legs with many setae.

Length of body—1.2 mm. Antenna—1.15 mm.
Fore wing—2.3 mm.

Host.—*Leonurus sibiricus.*

Distribution.—Formosa (Taihoku).

Collected by Mr. E. Kurosawa.

Toxoptera aurantii (**Boyer.**)

Aphis aurantii, **Boyer,** Ann. Ent. Soc. France, x, p. 178 (1841).
Toxoptera aurantii, **Koch,** Die Pflanz., p. 254 (1854–7); **Fullaway,**

Ann. Rept. Hawaii Agr. Expt. St. p. 31 (1910); **Essig,** Pom. Coll. Jour. Ent., iii, p. 601 (1911); **Davis,** U. S. Dept. Agr., Bur. Ent., tech. Bull. xxv, pt. i, p. 8 (1912); **Theobald,** Bull. Ent. Research, iv, p. 332 (1914); **van der Goot,** Contrib. Faun. Ind. Neerland, i, iii, p. 76 (1917); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc. viii, p. 80 (1918); **Swain,** Univ. Calif. Pub., iii, 1, p. 129 (1919); **Takahashi,** Zool. Mag. Tokyo, p. 197 (1920).

Toxoptera citrifolia, **Maki,** 農事試驗場特別報告（臺北）No. 8, p. 123 (大正二年).

Hosts.—*Citrus* spp; Ficus retusa; *Thea spp*; *Salix* sp.

Distribution.—Formosa (Taikoku); Java (v. d. G.); Ceylon (v.d. G.); Hawaii (Fullaway); India (Buckton); Africa (Theobald; Europe; North America.

In Tokio I have collected many viviparous females of this species on the galls of *Astegopteryx nekoashi* Sasaki.

Yamataphis rufiabdominalis **(Sasaki)**?

Toxoptera rufiabdominalis Sasaki.

Yamataphis rufiabdominalis Mats.

佐々木忠次郎　**日本農作物害蟲編** p. 202 (明治三十四年)

素木得一　**農事試驗場特別報告**（臺北）No. 8, p. 131 (大正二年).

Matsumura, Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 363 (1917).

Host—*Oryza sativa*, attacking the root.

Distribution.—Formosa (Ako); Japan.

I have never seen this species from Formosa.

Key to Formosan species of *Aphis*.

(1) Cornicles short, almost as long as or shorter than the cauda...(2)
Cornicles longer than the cauda... ... ...(11)

(2) Cornicles with a few bristles. ... ... *A. ficicola* n. sp.
Cornicles without bristles ... ...(3)

(3) Wingless viviparous females slightly covered with a pulvelrence(4)
Wingless viviparous females not covered with a pulvelrence ...(7)

(4) Frontal tubercles absent, on the inner side not convex.... ...
... ... *A. kurosawai* n. sp.
Frontal tubercles very short, on the inner side somewhat convex.
... ... (5)

(5) Spur very long and slender, about 4 or more times as long as the base ... ... *A. bambusae* **Full.**
Spur not so long. ... ...(6)

(6) Cornicles as long as the cauda. Spur almost as long as the 3rd joint. ... ... *A. droserae* n. sp.
Cornicles a little shorter than the cauda. Spur longer than the 3rd joint. ... ... *A. nasturtii* **Koch** ?

(7) Winged females with 8–15 sensoria on the 3rd antennal joint.(8)
Winged females with 4–6 sensoria on the 3rd antennal joint. (10)

(8) Body elongate; dark green... ... ... *A. maidis* **Fitch.**
Body not elongate; dark green, brownish or purple. ... ...(9)

(9) Body and antennae with rather long hairs. *A. somei* **Ess** et **Kuw.**
Body and antennae almost lacking long hairs. *A. formosanus* n. sp.

(10) Yellow. Feeding on *Melastoma*... ... ...*A. shirakii* n. sp.
Purplish or dirty yellow. Feeding on *Miscanthus* ... ...
... ... *A. miscanthi* n. sp.

(11) Wingless females densely covered with a white powder. .. ...
... ...*A. smilacifoliae* n. sp.
Wingless females not covered with a white powder. ... ... (12)

(12) Winged females with 5–10 sensoria on the 3rd antennal joint.(14)
Winged females with 15–18 sensoria on the 3rd antennal joint.(13)

(13) Spur of the last antennal joint longer than the 3rd. ... ...
... ... *A. tavalesi* **Del Guer**
Spur as long as the 3rd. ... . *A. rumicis* **L.**

(14) The 3rd antennal joint of the wingless vidiparous female longer

than or as long as the spur ... ... (15)
The 3rd antennal joint of the wingless viviparous female shorter than the spur ... ... *A. malvae* **Koch.**

(15) Wingless viviparous females dark brown or black... ... ... *A. medicaginis* **Koch.**
Wingless viviparous females yellow, green or dark green. ...(16)

(16) Rostrum of the winged female reaching the hind legs... ... ... *A. gossypsii* **Glove.**
Rostrum of the winged female not reaching the hind legs... (17)

(17) Yellow or yellowish green. ... ...*A. pomi* **De Geer.**
Orange yellow or dark green... ... ... *A. saliceti* **Kalt.**

Aphis gossypii **Glove.**

Glover, Rept. Dept. Agr. U.S. A. p. 36 (1876); **Pergande,** Insect Life, vii, pp. 309–315 (1895); **Gillette,** Jl. Econ. Ent., i, pp. 176–181 (1908); **Fullaway,** Ann. Rept. Hawaii Agr. Exp. St. for 1909, p. 39 (1910); **Theobald,** Bull. Ent. Research, iv, p. 321 (1914); **Maki,** Agr. Exp. St. Formosa, Bull. 103 (1916); **Matsumura,** Jl. Coll. Agr, Sapporo, vii, pt. 6, p. 357 (1917); **Das,** Mem. Ind. Mus., vi, p. 219 (1918); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc., 4th ser., viii, No. 3, p. 68 (1918); **Swain,** Univ. Calif. Pub. Tech. ser. Coll. Agr., Agr. Exp. St., iii, i, p. 105 (1919); **Paddock,** Texas Agr. Expt. St. Bull 257 (1919)

Hosts.—*Bidens pilosa* ; *Hibiscus rosa-sinensis* ; *Pirus serotina* ; *Acanthopanax aculeatum* ; *Papaver somniferum* ; *Gnaphalium japonicum.*

Distribution.—Formosa (Taihoku, Taichyu) ; Japan (Tokio ; Sapporo).
India (Das & Lefroy); Ceylon (v. d. Goot); Hawaii (Fullaway); Africa (Theobald); Europe; North America ; Malay (Jahore)

Dr. Shiraki collected some females on *Papaver* at Kagi, Formosa,

in March 1918.

Aphis gossypii **Glov.** *var. callicarpae n. v.*

(PL. v, 1, figs. 1–6 and PL. xii, 1, Figs 1–8

This variety differs from *A. gossypii* in the following points :

(1) Abdomen orange yellow. Head, pro- and mesothorax and hind half of the abdomen dark green.

(2) The relative length of antennal joints of the winged viviparous female as follows : III—34, IV—26, V—26, VI—56 (14+42).

Host.—*Callicaapa formosana.*

Distribution.—Formosa (Taihoku).

The winged form is very common.

Aphis malvae, **Koch.** (PL. xi, 2).

Aphis malvae, **Koch,** Die Pflanz. p. 125, figs. 169–170 (1857); **Das,** Mem. Ind. Mus. vi, p. 213, pl. xxv, figs. 9–16 (1918).

Aphis cucurbiti, **Buckton,** Monog. Br. Aphid. II, p. 56, pl. Liv, figs. 1–2 (1877).

Aphis possypii, **van der Goot,** Contrib. Fauna Ind. Neerland. i, iii, p. 93 (1917).

Hosts.—*Durranta plumieri*; *Clerodendron cryphyllum* ; *Cucumis sativa*; *Colocasia sp.*

Distribution.—Formosa (Taihoku); Japan (Tokyo).

India (Das); Java (v.d.G.); Europe.

Hitherto unrecorded from Formosa.

Aphis medicaginis **Koch.**

Aphis medicaginis, **Koch,** Pflanz., p. 94, pl. xvii, figs. 125–126 (1857); **Gillette,** Jour. Econ. Ent., i, pp. 177–178 (1908); **Essig,** Pom. Coll Jour. Ent., iii, p. 527 (1911); **Theoblad,** Bull. Ent. Research, vi, p. 128 (1915); **van der Goot,** Contrib. Faun. Ind. Neerland., i, iii, p. 98 (1917); **Das,** Mem. Ind. Mus., vi, p. 203 (1918); **Essig and Kuwana,**

Proc. Calif. Acad Sc., 4th S., viii, 3, pp. 71–72 (1918); **Swain,** Univ. Calif Pub. iii, p. 114 (1919).

Aphis rumicis, **Maki,** Agr. Expt. St. Formosa, Bull. 103 (1916).

Hosts—*Pisum* spp.; *Wikstroemia indica*; *Aeschynomena indica.*

Distribution.—Formosa (Taihoku); Japan (Tokyo, Sapporo); Malay (Jahore); Java (v. d. G.); Ceylon (v. d. G.); India (Das); Africa (Theobald); Europe; North America.

Dr. Shiraki collected winged females on the islands of Boko, Formosa, in April 1920.

Aphis rumicis **L.**

Linnaeus, Syst. Nat., ii, pp. 734,5 and 736 (1767); **Buckton,** Mon. Brit. Aphid., ii, p. 85, pl. lxiv (1877); **Thomas,** Illinois St. Lab. Nat. Hist., Bull. 2,p. 13(1878); **Oestland,** Geol. Nat. Hist. Survey, Minnesota, p. 61 (1887); **Gillette,** Jour. Econ. Ent., iii, p. 406 (1910); **Patch,** Maine Agr. Expt. St., Bull. 202, p, 177 (1912); **Theobald,** Bull. Ent. Res., iv, p. 329 (1914), and Canad. Ent. p. 234 (1916); **van der Goot,** Kenntnis Holland. Blattl., p. 220 (1915); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt. 6., p. 357 (1918); **Das,** Mem. Ind. Mus., vi, p. 203 (1918); **Essig and Kuwana,** Proc. Calif. Acad. Sc., 4th s., viii, p. 73 (1918).

Host.—*Solanum nigrum.*

Distribution.—Formosa (Taihoku); Japan (Tokyo, Sapporo); India (Das); Africa (Theobald); Europe, North America.

A plant-louse determined by Mr. M. Maki as *Aphis rumicis* L., does not belong to this species, but to *A. medicaginis* Koch.

Aphis saliceti **Kalt.** (PL. xiii, 1, figs. 9–14)

Aphis saliceti, **Kaltenbach,** Monog. Pfl. p. 103 (1843); **Koch,** Die Pfl. p. 118 (1857); **Buckton,** Monog. Br. Aphid. vol. II, p. 52 (1879); **Van der Goot,** Beiträge zur Kenntnis der Holland. Blat läuse, p. 225 (1915); **Gillette and Bragg,** Can. Ent. L, No, 3, p. 89 (1918).

Siphonophora salicicola, **Thomas,** Bull. 2, Ill. St, Lab. Nat. Hist., p. 8 (1878).

Aphie salicicola, **Monell,** Bull. 5, U. S. Geol. Surv., p. 24 (1879). **Oestland,** Bull. 4, Geol. Nat. Hist. Survey Minnesota, p. 63 (1887); **Davis,** Jour. Econ. Entom. III, p. 490 (1910); **Davidson,** Jour. Econ. Entom. v, p 408 (1912); **Patch,** Bull. 213, Maine Agr. Expt. St., p. 81 (1913).

Aphis yanagicola, **Matsumura,** Jl. Coll. Agr. Sapporo, vii, pt. 6, p. 390 (1917).

Host.—*Salix sp.*

Distribution.—Formosa (Taihoku); Japan (Tokio, Sapporo); Europe; North America.

Hitherto unrecorded from Formosa.

In Formosa I have never found the sexual forms during the spring and summer.

Aphis tavaresi Del Guercio.

Aphis tavaresi, **Del Guercio,** Broteria, vii, p. 143, pl. xvi, Figs. 1-2 (1908); **Theobald,** Bull. Ent. Research, iv, p. 323 (1914); **van der Goot,** Contrib. Fauna. Ind. Neerland.. i, iii, p. 108 (1917).

Aphis citricola, **van der Goot,** Mittel. Nat. Mus. 29, 2 Bieh. Jahrb. Hamb. Wissen. Aust 29, pp. 273–273 (1912); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc. viii, p. 68 (1918).

Myzus citricidus, **Shiraki,** 農事試驗場特別報告 第八號 (臺北) p. 112 (大正二年).

Hosts.—*Citrus* spp.

Distribution.—Formosa (Toihoku); Japan (Essig and Kuwana); Java (v.d.G.); Ceylon (v. d. G.); Africa (Theobald); Europe (Del Guercio); Chile (v.d.G.)

Myzus citricidus Kirkaldy (Proc. Hawaii Ent. Soc., i, pt. 3, p. 100, 1907) seems to be identical with this species, although his original description is too brief to decide this possitively.

Aphis pomi De Geer.

Aphis pomi, **De Geer**, Mems. III, p. 53 (1773); **Gillette,** Jour.

Econ. Entom. i, p. 302 (1908); **Theobald,** Bull. Ent. Res, iv, p. 323 (1914), and Can. Ent. p. 169 (1916); **van der Goot,** Kenntis Holland. Blattl. p. 210 (1915); **Baker** and **Turner,** Jour. Agr. Res., v, p. 955 (1916); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, p. 367 (1917); **Essig** and **Kuwana,** Proc. Calif. Acad. Sc. 4th series, viii, p. 73 (1918); **Swain,** Univ. Calif. Pub. vol. iii, p. 120 (1919); **Matheson,** Cornell Univ. Agr. Expt. St. Memoirs, 24, pp. 683–720 (1919).

Aphis mali, **Fabricius,** Syst. Ent., p. 737; **Kaltenbach,** Mono. Pflanz. i, p. 72 (1843); **Buckton,** Mon. Br. Aphid. ii, p. 44, pl. L (1877); **Thomas,** Illinois St. Lab. Nat. Hist. Bull. 2, p. 11 (1878); **Oestland,** Geol. Nat. Hist. Survey, Minnesota, Bull. 1, p. 64 (1887).

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Host.—*Pirus serotina*; *Glochidion spp.*

Distribution.—Formosa (Taihoku); Japan.

Africa (Theobald); Europe; North America.

Aphis smilacifoliae n. sp. (PL. iv, 2, figs. 1–12).

Aphis gossypii **Essig** et **Kuw.** (in part.) Proc. Calif. Acad. Sc., 4th series, vol. VIII, No. 3, p. 69 (1918).

Wingless viviparous female.

Dark green. Eyes blackish brown. Antennae pale brown, with the last 2 joints darker. Legs pale brown; apices of tibiae, and the tarsi black. Cornicles dark green. Cauda black, with the base green. Body oval, broadest at the middle of the abdomen, furnished with a few long fine hairs and densely covered with a white powder. Eyes rather small. Frontal tubercles scarcely apparent. Antennae with some long fine hairs; the 1st joint much broader than the 2nd, the inner side convex; the 3rd without sensoria; the 4th slightly imbricated; the relative length of joints as follows: III—40, IV—33, V—32, VI—56 (15+41). Rostrum short and stout, not reaching the middle legs. Prothorax and the 1st and 7th abdominal segments on

each side with a small lateral tubercle which is not sharphy pointed. Cornicles stout, about 4 times as long as wide, broadest at the base and somewhat imbricated.

Cauda very short, and at the apex rounded, with some long fine hairs. Legs rather long; hind legs very long and slender; with many long fine hairs.

Length of body—1.8 mm. Antenna—1.8 mm.
Cornicle—0.3 mm.

Winged viviparous female.

Dark green. Wings hyaline, the 1st and 2nd obliques slightly clouded, stigma and veins blackish brown.

Body almost without hairs, but provided with white secretions. Frontal tubercles conspicuous (see pl. iv, 2, fig. 7). Eyes large; ocular tubercles very small, but prominent. Antennae very slender, imbricated, with some short hairs; the 1st joint much larger than the 2nd; the 3rd with about 10 small sensoria in a row distributed almost throughout the whole length; the 4th lacking sensoria; the apical sensoria of the 5th very small; the relative length of joints is as follows: III—40, IV—29, V—30, VI—57 (17+40).

Prothorax and the 1st and 7th abdominal segments with a very small lateral tubercle.

Wing-veins stout; the 2nd oblique slightly curved; obliques on the hind wings parallel; hooklets 2.

Cornicles not reaching the caudal apex; broadest at the base, somewhat curved and minutely imbricated. Cauda short, broadest at the base, hairy. Legs long and slender, with many hairs; tarsi very slender.

Length of Body—1.5 mm. Antenna—1.7 mm.
Cornicle—0.23 mm.

Host.—*Smilax china.*

Distribution.—Formosa, Japan (Tokio).

The winged viviparous females are rather common.

Aphis droserae n. sp. (PL. xiv, 1, figs. 7–9).

Wingless viviparous female.

Greenish black. Head, eyes and cornicles black. Antennae black, at the bases paler. Cauda concolourous with the abdomen, with the paler base. Femora blackish brown; tibiae pale brown, with the apices black; tarsi black.

Body oval, slightly pulverulent, without hairs. Head with a few short bristles. Frontal tubercles very short, somewhat convex on the inner side. Antennae imbricated, with about 4 very short bristles; the 3rd joint lacking sensoria; apical sensoria of the 5th joint very small; the relative length of joints as follows : III—22, IV—14, V—17, VI —31 (10+21).

Rostrum stout, reaching almost the hind coxae. Prothorax and the 1st abdominal segment with a small lateral tubercle which is not sharply pointed. Cornicles very short, as long as the cauda, not reaching the cauda, about 4 times as long as wide at midlength, imbricated, broadest at the base and tapering. Cauda with a distinct constriction about the middle, with 3 pairs of long lateral bristles. Legs slender, with some setae.

Length of body—1.0 mm. Antenna—0.7 mm.

Winged viviparous female.

Colour almost similar to the wingless form. Thorax and antennae black. Wings with pale gray stigma and veins. Body lacking a powder. Antennae imbricated, without hairs; the 3rd joint with 6 circular sensoria in a row almost over the whole length; the 4th joint locking sensoria; the relative length of joints as follows: III—18, IV —12, V—13, VI—30 (9+21). Rostrum stout, reaching beyond the middle coxae. Wings normal; hooklets 2.

Host.—*Drosera lourerii.*

Distrilrition.—Formosa (Sozan)

This peculiar *Aphis* somewhat resambles *Aphis bambusae* Fullaway,

but differs from the latter in the structure of the antennae, the colour of the body, etc.

Aphis droserae is found on the flower or the underside of the leaf of *Drosera loureii*, a well known insectivorous plant in Japan.

Aphis bambusae **Fullaway.** (PL. xii, 2, figs. 5–9)

Aphis bambusae, **Fullaway,** Ann. Rept. Hawaii Agr. Expt. St. p. 35 (1910).

Melanaphis, bambusae, **van der Goot,** Contrib. Fauna Indes Neerland. i, iii, p. 61 (1917).

Host.—*Bambusa* nana.

Distribution.—Formosa (Taihoku).

Hawaii (Fullaway); Java (v.d.G.); Singapore (v.d.G.); Hongkong (v.d.G.)

Hitherto unrecorded from Japan.

This species is rather rare near Taihoku and I have never collected the winged females.

Aphis nasturtii **Koch.**?

Die Pflanzenl. p. 136 (1857).

Wingless viviparous female.

Dark green, slightly covered with a white powder. Body oval, almost lacking hairs. Frontal tubercles very short, somewhat convex on the inner side. Antennae 4 or 5–jointed, imbricated, lacking hairs; the 3rd joint lacking sensoria; the relative length of joints as follows: III—14, IV—10, V—11, VI—28 (8+20). Rostrum reaching beyond the middle coxae. Prothorax and the 1st and 7th abdominal segments with a small lateral tubercle. Cornicles very short, stout, not reaching the caudal base, imbricated, broadest at the base, very slightly narrowed at the middle portion, about 2 times as long as wide at the base. Cauda a little longer and wider than the cornicle, constricted about the middle, with 3 pairs of lateral long bristles.

Legs with some moderately long hairs; hind tarsi a little shorter than the cornicle.

Length of body—1.15 mm. Antenna—1.1 mm.

Winged viviparous female.

Body lacking hairs. Antennae imbricated, without hairs; the 3rd joint with 5 mostly rather large circular sensoria almost in a row over the whole length; the 4th joint lacking sensoria; the relative length of joints as follows: III—20, IV—11, V—15, VI—34 (9+25). Rostrum reaching beyond the middle coxae. Wings normal; the 3rd oblique reaching the wing apex. Cornicles very short, stout, not reaching the caudal base, imbricated, broadest at the base, almost not tapering, about 2.2 times as long as wide at the base. Cauda a little longer than the cornicle, with 6 long lateral bristles. Legs slender, with some moderately long bristles; hind tarsi almost as long as the cornicle.

Length of body—1.15 mm. Antenna—0.75 mm.

Host.—*Stellaria uliginosa.*

Distribution.—Formosa (Shirin). Collected by Mr. E. Kurosawa.

Aphis kurosawai n. sp. (PL. xiv, 2, figs. 1–3).

Wingless viviparous female.

Green, slightly covered with a white powder. Cornicles black. Body oval, with some normal hairs. Frontal tubercles absent. Antennae short, imbricated, with a few short hairs; the 3rd joint lacking sensoria; the relative length of joints as follows : III—11, IV—9, V—10, VI—22 (8+14). Rostrum reaching the middle coxae. Prothorax and the 1st and 7th abdominal segments with a small blunt tubercle on the side. Cornicles very short, rather stout, not reaching the caudal base, imbricated, broadest at the base, slightly tapering, about 3 times as long as wide at the base. Cauda almost as long as the cornicle, constricted about the middle, with 3 pairs of lateral bristles.

Legs with many moderately long hairs; tarsi rather short; hind tarsi much shorter than the cornicle.

Length of body—1.5 mm. Antenna—0.55 mm.

Winged viviparous female.

Body with some normal hairs. Antennae very short, slightly stout, imbricated, without hairs; the 3rd joint with 3—6 large circular sensoria almost in a row over the whole length; the 4th joint lacking sensoria; the relative length of joints as follows: III—18, IV—12, V—14, VI—26 (10+16). Rostrum reaching the middle coxae. Prothorax with a short distinct tubercle on each side; the 1st, 3rd and 7th abdominal segments with a small lateral tubercle. Wings hyaline; the 2nd branch of the 3rd oblique short; hind wings with 2 obliques which are parallel; hooklets 3. Cornicles very short, not reaching the caudal base, imbricated, cylindrical, very slightly tapering, about 3 times as long as wide, about 1.5 times as long as the hind tarsi, equal in length to those of the wingless form. Cauda a little longer than the hind tarsi, but very slightly shorter than the cornicle, constricted about the middle, with some pairs of lateral bristles. Legs slender, with many hairs; tarsi rather short. Head, antennae, eyes, thorax, cornicles and cauda black. Abdomen greenish.

Length of body—1.5 mm. Antenna—0.75 mm.

Fore wing—2.4 mm.

Host.—*Artemisia vulgaris, var indica.*

Distribution.—Formosa (Shirin)

Collected by Mr. E. Kurosawa.

The species described above is distinct from all the species of *Aphis* found on the artemisia in the very short cornicles.

Aphis formosanus n. sp. (PL. xiv, 1, figs. 10—14).

Described from specimens preserved in alcohol.

Winged viviparous female.

Purple. Eyes red. Antennae dusky, except the basal half of the 3rd joint yellowish brown.

Cornicles blackish purple. Cauda yellow. Wings narrowly clouded along the veins; veins dark brown, stigma pale brown. Legs pale yellowish brown; apices of femora and tibiae, and tarsi black.

Body without hairs. Frontal tubercles very short. Antennae imbricated, without hairs; the 3rd joint with about 8–13 sensoria of various size not in one row on the whole length; the 4th without sensoria; the relative length of joints as follows: III—24, IV—18, V—18, VI—41 (7+34).

Rostrum stout, not reaching the middle legs. Prothorax and the 1st and 7th abdominal segments with a very small lateral tubercle.

Wings rather narrow, the 3rd oblique reaching the wing-apex; hind wings with 2 obliques somewhat divergent or parallel; hooklets 3.

Cornicles very short, not reaching the cauda, minutely imbricated, 2.5 times as long as wide, about as long as the hind tarsi. not dilated at the middle. Cauda almost as long as the cornicle, with 4 pairs of lateral bristles.

Length of body—1.5 mm. Antenna—1.0 mm.
Fore wing—1.9 mm.

Host.—A plant of the Gramineae; *Sorghum vulgare*.

Distribution.—Formosa (Taihoku)

Aphis miscanthi n. sp. (PL. ix, 1, figs. 17–19).

Wingless viviparous female.

Yellowish gray or dirty yellow or sometimes dark purple. Head, eyes and cornicles black. Antennae pale brownish, with the apical half black. Legs pale brown, except the apices of tibiae, and the tarsi which are black. Cauda dusky. Body broad, with a few short hairs. Head very small. Eyes small. Frontal tubercles lacking. Antennae short, 5-jointed, without hairs; the 3rd joint lacking sensoria, not

imbricated; the relative length of joints as follows : III—28, IV—13, V—41 (9+32).

Rostrum stout, not reaching the middle coxae. Body with a few lateral tubercles. Cornicles very short, imbricated, about twice as long as wide, slightly constricted near the distal end.

Cauda broader and a little longer than the cornicle, somewhat narrowed at the middle, rounded at the apex, hairy, Legs slender, with many long fine hairs.

Length of body—1.3 mm. Antenna—0.8 mm.

Winged viviparous female.

Purple. Head, eyes and thorax black. Antennae black, paler at the base. Cornicles pale blackish purple. Cauda purple. Legs pale brown, with the apices of tibiae, and the tarsi black. Wings clouded along the veins; veins black; stigma gray. Body with some hairs. Frontal tubercles very short. Antennae imbricated, 6-jointed, without hairs; the 3rd joint with 4 sensoria; the 3rd, 4th and 5th joints nearly equal in length; the 6th the longest, a little shorter than the 3rd, 4th and 5th taken together, the basal part nearly as long as the half of the 5th. Rostrum stout, not reaching the middle coxae. The 7th abdominal segment with a lateral tubercle. Wings somewhat narrow; the 3rd oblique reaching the wing-apex; hind wings with 2 nearly parallel obliques; hooklets 3. Cornicles very short, nearly twice as long as wide, slightly constricted at the apical portion.

Cauda rounded at the apex, with many long fine lateral hairs. Legs with some short and long bristles.

Length of body—1.15 mm. Antenna—1.0 mm
Fore wing—1.75 mm. Width of fore wing—0.6 mm.

Host.—*Miscanthus* sp.

Distribution.—Formosa (Taihoku, Koshyun)

The winged females are very rare and the sexual forms have never been collected.

Dr. Shiraki collected a few winged and wingless females in May 1921 in Koshyun.

Aphis maidis Fitch.

Aphis maidis, **Fitch,** Insects N. Y., vol. i, p. 318 (1855); **Oestland,** Geol. Nat. Hist. Survey Minnesota, Bull. 4, p. 56 (1887); **Sanborn,** Kansas Univ. Sc. Bull. vol. III, No. 1, p. 58, pl. xi, fig. 66 (1904); **Davis,** U. S. Dept. Agr. Bur. Ent. Tech. Ser., No. 12 (1909); **Fullaway,** Ann. Rept. Hawaii Agr. Expt. St., p. 41 (1910); **Patch,** Maine Agr. Expt. St., Bull. 202 (1912); **Theobald,** Bull. Ent. Res., vi, p. 128 (1915); **Das,** Mem. Ind. Mus. vi, p. 208 (1918).

Siphonaphis maidis, **van der Goot,** Contrib. Faun. Ind. Neerland., i, iii, p. 67 (1917).

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Hosts.—Wheat; oats; grasses.

Distribution.—Formosa; Japan (Tokio).

Java (v. d. G); India (Das); Hawaii (Fullaway); Africa (Theobald); North America.

Aplis ficicola n. sp. (PL. iv, 2, figs. 13-17).

Wingless viviparous female.

Described from specimens preserved in alcohol.

Body and antennae blackish brown. Eyes, cornicles and cauda black. Legs black, except the basal half of femur and the middle part of tibia which are dark brown.

Body wide, with some long fine hairs. Eyes rather small. Frontal tubercles very short. Antennae stout, provided with many long fine hairs; the 3rd joint imbricated, lacking sensoria; the relative length of joints as follows: III–30, IV–22, V–24, VI–35 (10+25). Rostrum reaching almost the middle coxae. Prothorax with a lateral tubercle. Abdomen with a few lateral obtuse tubercles which are smaller than those on the prothorax. Cornicles very short, almost

twice as long as wide, broadest at the base, imbricated, and provided with 2–4 long bristles. Cauda large, wider and a little longer than the cornicle, provided with many long hairs. Legs long and stout, provided with many long fine hairs.

Length of body—1.6 mm. Antenna—1.0 mm.

Host.—*Ficus wightiana.*

Distribution.—Formosa (Taihoku).

Aphis somei **Essig** et **Kuw.** (PL. i, 2, figs. 11–18).

Proc. Calif. Acad. Sc. 4th Series, viii, No. 3, pp. 75–76 (1918).

Hosts.—*Rhus semialata*; *Sapium sebiferum*; *Heptapleurum octophyllum*; *Viburnum formosanum*; *Bischoffia javanica*; *Pittosporum tobira.*

Distribution.—Formosa (Taihoku, Urai, Shinka, Shirin, Kwanshirei; Shinchiku); Japan (Tokyo).

Hitherto unrecorded from Formosa.

Aphis shirakii n. sp. (PL. v, i, figs. 7–15).

Wingless viviparous female.

Yellow. Eyes black. Antennae and legs pale yellow. Cornicles and cauda dusky. Body oval, strongly convex on the dorsum, without hairs. Eyes small. Frontal tubercles very short. Antennae short, 5-jointed, not hairy, imbricated; the 3rd joint without sensoria; the relative length of joints as follows: III–30, IV–14, V–41 (11+30). Rostrum stout, reaching beyond the middle coxae. Prothorax and the 1st and 7th abdominal segments with a small, blunt tubercle on each side. Mesothorax with a short, blunt lateral tubercle, which is larger than those on the prothorox and abdomen, at the front angle. Cornicles imbricated, rather short, not reaching the cauda, about 4 times as long as wide, broadest at the base, and somewhat tapering. Cauda large, a little shorter, but wider than the cornicle, with 3 or 4 pairs of long lateral bristles. Legs short, with a few short setae.

Length of body—1.15 mm. Antenna—0.75 mm.
Cornicle—0.2 mm.

Winged viviparous female.

Yellow. Antennae pale yellow, with the apices of joints dusky. Eyes blackish red. Head and mesothorax dusky. Wings hyaline; stigma pale yellow, veins brown. Cornicles and cauda yellow. Legs pale yellow; apices of tibiae, and the tarsi dusky. Body with a few very short hairs. Frontal tubercles lacking. Eyes normal. Antennae well imbricated, without hairs, 6-jointed; the 3rd joint with 4–6 sensoria in a row; the 4th joint lacking sensoria; the relative length of joints as follows: III–24, IV–13, V–14. VI–40 (10+30). Rostrum stout, reaching a little beyond the hind legs. Prothorax and the 1st and 7th abdominal segments with a small, blunt lateral tubercle. Mesothorax with a short, blunt lateral tubercle which is larger than that on the prothorax. The 3rd oblique twice forked; hind wings with 2 parallel obliques; hooklets 2. Cornicles short, stout, imbricated, not reaching the cauda, somewhat tapering.

Cauda large, a little shorter than the cornicle, with 4 pairs of long lateral bristles. Legs slender with some small setae.

Length of body—0.7 mm. Antenna—0.7 mm.
Fore wing—1.3 mm. Width of fore wing—0.45 mm.

Host.—*Melastoma candidum.*

Distribution.—Formosa (Taihoku); Malay (Jahore).

The winged females appear in the autumn and winter. I collected dark green individuals in December 1920 and January 1921.

Anuraphis helichrysi **Kalt.** (PL. xiii, 2, figs. 7–9).

Aphis helichrysi, **Kaltenbach,** Monog. Pflanz. (1843).

Aphis myosotidis, **Koch,** Pflanz. p. 57 (1857).

Aphis pruni, **Koch,** Pflanz. p. 68 (1857); **Buckton,** Monog. Brit. Aphid. II, p. 64 (1877).

Brachycaudus helichrysi, **van der Goot,** Tijds. voor Entom. p. 97 (1913), Beiträge Kenntnis Holland Blattl. p. 256 (1915) and Contrib. Fauna Indes Neerland, I, III, p. 120 (1917).

Brachycaudus myosotidis, **van der Goot,** Tijds. voor Entom. p. 97 (1913).

Brachycaudus pruni, **van der Good,** Tijds. voor Entom. p. 97 (1913); **Das,** Memoirs Indian Mus. VI, p. 222 (1918).

Anuraphis helichrysi, **Baker,** Monthly Bull. Dept. Agr. Calif. ix, Nos. 5–6, p. 203 (1920).

Host.—*Vernonia chinensis*; *Bothriospermum tenellum*.

Distribution.—Formosa (Taihoku, Tansui).

Ceylon (v. d. G.); India (Das); Java (v. d. Goot); Europe; North America.

Hitherto unrecorded from Formosa.

Brachycolus heraculi n. sp. (PL. xii, 1, figs. 9–13).

Wingless viviparous female.

Green. Head slightly dusky. Eyes black. Antennae pale green, apex of the 5th joint, and the 6th dusky. Cornicles pale green, with dusky apices. Legs pale green, apices of tibiae, and tarsi dusky. Cauda green.

Body oval, not elongated, lacking hairs, pulverulent. Frontal tubercles absent. Antenae short, imbricated, provided with a few very short hairs; the 3rd joint lacking sensoria; the relative length of joints as follows: III–39, IV–14, V–11, VI–36 (11+25). Rostrum reaching the middle legs. Body lacking lateral tubercles. Cornicles very small, almost twice as long as wide, slightly swollen. Cauda large and stout, as long as the spur of the last antennal joint, broadest at the base, tapering, longer than wide, 2.5 times as long as the cornicle, a little longer than the hind tarsi, with 3 pairs of lateral bristles.

Legs with some moderately long setae; tarsi rather long.

Length of body—1.7 mm. Antenna—0.8 mm.

Winged viviparous female.

Green. Head, eyes and mesothorax black. Antennae black, except the base of the 3rd joint green. Wings hyaline, stigma and veins gray. Cauda green. Femora black, except the bases green; tibiae brown, with black apices; tarsi black. Body without hairs. Frontal tubercles absent. Antennae without hairs; the 3rd joint somewhat imbricated, provided with 37 large or small, circular or oval sensoria scattered over the whole length; the 4th joint provided with 11, the 5th joint 3+1 sensoria; the relative length of joints as follows: III–62, IV–23, V–16, VI–56 (11+45). Rostrum reaching the middle legs. Prothorax with a very small lateral tubercle; abdomen without lateral tubercles. Wings normal; subcosta provided with 5 sensoria on the distal half; hind wings with 2 parallel obliques; hooklets 3. Cornicles very small, about twice as long as wide, imbricated, very slightly swollen. Cauda large, triangular when seen from above, a little longer than wide, 3 times as long as the cornicle, almost subequal in length to the 4th antennal joint.

Body—1.5 mm. Antenna—1.3 mm.

Fore wing—2.3 mm.

Hosts.—*Apium graveolens*; *Heracleum sp.*

Distribution.—Formosa (Taihoku, Ako, Kagi).

Many winged females and their nymphs were collected by Mr. S. Isshiki in Ako in March, 1921.

This new aphis is distinguished from *B. stellariae* Hardy in the structure of the antennae.

Brachysiphoniella n. g.

Body oval, not elongated, without prominent hairs. Frontal tubercles absent. Eyes normal. Antennae much shorter than the body, 6-jointed; spur longer than the base.

Wings with the 3rd oblique twice forked; hind wings with 2 obliques. Cornicles very small, as long as or a little longer than wide, broadest at the base, without constriction. Cauda large and very long, with a constriction about the middle.

Type—*Brachycolus gramini* **Takahashi.**

This genus is closely related to *Brachycolus* **Buckt.,** but is distinguished from it by the structure of the cornicle, as well as, by the larger cauda.

Brachysiphoniella gramini **Tak.** (PL. xiv, 1, figs. 5–6).

Brachycolus gramini, **Takahashi,** Canada. Entom. lii, p. 77 (1920) and Zool. Mag. Tokio, xxxii, No. 380, pp. 197–198 (1920).

Wingless viviparous female.

Brownish green, densely covered with a white powder. Head, eyes, distal halves of antennae, cornicles and cauda black. Antennae brownish on the basal half. Legs brownish, except distal halves of femora, apices of tibiae, and tarsi black.

Body oval, not elongated, without hairs. Frontal tubercles absent. Eyes small. Antennae short, rather stout, imbricated, without hairs; the 3rd joint lacking sensoria; the relative length of joints as follows: III–19, IV–16, V–19, VI–36 (13+23). Rostrum stout, reaching the middle legs. Body without lateral tubercles. Cornicles very small, a little longer than wide, broadest at the base, without constriction. Cauda very large and long, much longer than the hind tarsi, with a constriction about the middle, with many long hairs. Legs rather stout, with some short hairs.

Length of body—1.4 mm. Antenna—0.75 mm.

Host.—*Leersia hexandra.*

Distribution.—Formosa (Taihoku, Tainan), Japan (Tokio).

Hitherto unrecorded from Formosa.

Many wingless females are often completely submerged in the water on the blades of the host and apparently in no wise disturbed or

inconvenienced by this circumstance, but are to all appearances as comfortable as those above water.

This aphis on account of the waxy powder covering the body appears to be particularly adapted to a life in moist localities and to suffer no inconvenience from contact with water when submerged.

Tribe *Trichosiphina.*

Key to subtribes.

(1) Wingless females with many elongate, branched projections. ... ... Subtribe *Cervaphidini.*
Wingless females without branched projections. ... ... Subtribe *Trichosiphini.*

Subtribe *Trichosiphini.*

(1) Antennae 6-jointed. ... ... *Greenidea* **Schout.**
Antennae 5-jointed. ... ... *Eutrichosiphum* **Essig** et **Kuw.**

Key to Formosan species of *Greenidea.*

Wingless viviparous female.

(1) 3rd antennal joint longer than spur. ... ... (3)
3rd antennal joint shorter than spur. ... ... (2)
(2) Dark brown or yellowish brown. Cornicles rather stout, not conspicuously elongate. ... ... *G. ficicola* n. sp.
Greenish yellow. Cornicles slender and very long. ... ... *G. quercifoliae* n. sp.
(3) Caudal segment without a process. ... ... (4)
Caudal segment with a process. ... ... (5)
(4) Yellow, without a black patch on the dorsum. ... ... *G. taiwana* n. sp.
Pale yellow, with the dorsum of abdomen blackish. ... ... *G. nigrofasciatum* (**Maki**).

(5) Black. ... ... *G. nigrum* (**Maki.**)
Yellowish brown. ... ... *G. formosanum* (**Maki.**)

Winged viviparous female.

(1) Caudal segment without a proces. ... ... (2)
Caudal segment with a process. ... ... (3)
(2) 3rd antennal joint with about 12 sensoria. ... ... *G. nigrofasciatum* (**Maki.**)
3rd antennal joint with about 25 sensoria. ... *G. taiwana* n. sp.
(3) 3rd antennal joint with about 20–24 sensoria. ... ... (4)
3rd antennal joint with about 30 sensoria. *G. formosanum* (**Maki.**)
(4) Black. ... ... *G. nigrum* (**Maki.**)
Yellowish green. ... ... *G. ficicola* n. sp.

Greenidea quercifoliae n. sp. (PL. vii, 2, figs. 1–5).

Wingless viviparous female.

Greenish yellow; dorsum of the abdomen slightly dusky. The 3rd and 4th antennal joints yellowish brown; apex of the 4th, and the 5th and 6th joints black. Cornicles black, with the base yellowish green. Legs yellowish brown; apices of tibiae dusky; tarsi black. Cauda yellow. Eyes dark red. Body flat, with many long stout mostly knobbed hairs. Head large and flat; frontal tubercles short, but distinct. Eyes very small, each with a prominent tubercle. Antennae imbricated, with some long stout bristles; the 1st joint on the outer side with a very small blunt tubercle; the 3rd without sensoria; the relative length of joints as follows: III–45, IV–29, V–31, VI–82 (23+59). Rostrum slender, reaching far beyond the hind coxae. Head and prothorax not well-defined. Thorax narrower than the abdomen; prothorax large, the spiracles prominently protuberant. Abdomen circular and somewhat convex. Cornicles very long and slender, slightly dilated near the base, covered with numerous long stout bristles intermixed with many minute hairs

on the apical portion. Cauda with a process. Anal plate sometimes slightly sinuated at the middle of the posterior margin, furnished with many long bristles. Legs slender, with many long or moderately long stout setae.

Length of body—1.8 mm. Antenna—1.9 mm.
Cornicle—0.8 mm.

Host.—*Quercus variabilis.*

Distribution.—Formosa (Taihoku).

Collected by the author.

Greenidea formosanum (**Maki.**)

Trichosiphum formosanum **Maki.** Collect. Essays for Nawa, p. 13, pls. viii–ix, 1, 2 (1917).

牧茂市郎 **臺灣農事報** No. 138, p. 340 (1918).

Hosts.—*Psidium guyava.*

Distribution.—Formosa (Taihoku, Shirin, Shinten, Urai, Koheki, Kanshirei, Koshyun).

Greenidea nigrum (**Maki.**)

Trichosiphum nigrum **Maki.** Collect. Essays for Nawa, p. 10, pl. vii (1917).

牧茂市郎 **臺灣農事報** No. 138, p. 338 (1918).

Host.—*Quercus* sp.

Distribution.—Formosa (Taihoku).

Greenidea nigrofasciatum (**Maki.**)

Trichosiphum nigrofasciatum **Maki.** Collect. Essays for Nawa, p. 16, pl. ix, 3–7 (1917).

牧茂市郎 **臺灣農事報** No. 138, p. 342 (1918).

Hosts.—*Quercus* spp.

Distribution.—Formosa.

Greenidea ficicola n. sp. (PL. vii, 1, figs. 6–10 and PL. vii, 2, figs. 6–7).

Wingless viviparous female.

Yellowish brown or dark brown. Body with many long stout bristles, some of which are knobbed. Frontal tubercles very short. Eyes small, with a prominent ocular tubercle. Antennae with many long bristles; the relative length of joints as follows: III–44...48, IV–31...33, V–32...33, VI–87 (26+61)...89 (26+63). Head and prothorax not well-defined. Abdomen circular, somewhat convex. Cornicles long, broadest at the middle, with numerous long bristles intermixed with many minute hairs on the apical portion. Anal plate not sinuated. Cauda with a distinct process.

Length of body—2.2 mm. Antenna—2.1 mm.
Cornicle—0.7 mm.

Winged viviparous female.

General colour yellowish green. Head yellowish brown. Eyes red. Antennae black, Pronotum and mesothorax dusky. Dorsal surface of abdomen dusky on the apical half, on the basal half with a few small dusky spots. Legs yellowish brown; tibiae blackish brown or black. Cornicles black. Cauda pale green. Wings hyaline; stigma dusky, veins brown or blackish brown. Body elongate, broadest at midlength of the abdomen. Head a little shorter than the prothorax, with some long bristles between the antennae. Eyes large; ocular tubercles very prominent. Frontal tubercles very short. Antennae with many long bristles; the 3rd joint provided with 20–23 circular or oval sensoria arranged in a row from the base; the 4th lacking sensoria; the relative length of joints as follows: III–67, IV–35, V–?, VI–? Rostrum long and slender, extending beyond the hind coxae. Prothorax with many long bristles on the sides. The 2nd oblique distinctly curved; the 3rd twice forked; stigmatic vein reaching the apex of wing; hind wings with 2 obliques not parallel;

hooklets 3. Abdomen with a few short bristles on each side, these shorter than those on the head.

Cornicles very long and slender, with many long bristles. Cauda with a process. Legs long and slender, with many very long setae.

Length of body—2.5 mm. Antenna—?
Fore wing—2.7 mm. Width of fore wing—1.0 mm.
Cornicle—1.3 mm.

Host.—*Ficus retusa*; *Ficus obscura*.

Distribution.—Formosa (Taihoku; Urai).

Greenidea taiwana n. sp. (PL. vi, 2,).

Wingless viviparous female.

Yellow. Eyes red. Antennae yellow; apex of the 5th, and the 6th joints dusky. Cornicles yellow, except the black apex. Caudal segment concolourous with the remainder of body. Legs yellowish brown; tarsi dark brown.

Body with numerous hairs that are not knobbed. Eyes rather small. Antennae 5 or 6-jointed, with long bristles; the 3rd joint lacking sensoria and imbricated; the relative length of joints as follows: III–50, IV–13, V–16, VI–33 (12+21). Head and prothorax not well-defined. Rostrum slender, reaching beyond the hind coxae. Cornicles long and stout, nearly equal in width through their length, but the apical portion gradually narrowed towards the tip; the surface covered with many long bristles intermixed with many minute hairs at the apex and not furnished with "spinule-rows." Last abdominal segment rounded and not produced into a process. Legs slender, with many long bristles.

Length of body—1.7 mm. Antenna—1.2 mm.
Cornicle—0.75 mm.

Winged viviparous female.

Head brownish green. Eyes red. Antennae black, paler at the

bases of the 4th and 5th joints. Pronotum brownish green, with a dusky portion on each side. Mesothorax dusky. Abdomen yellowish green, the dorsum mostly dusky. Cornicles black. Last abdominal segment pale green. Anal plate dusky. Wings hyaline; stigma black; subcosta brown; obliques blackish brown or black. Legs yellowish brown, with tarsi black.

Body oblong; head and pronotum with many long rather fine hairs; abdomen with some shorter hairs.

Antennae 6-jointed, furnished with rather long, stout bristles; the 3rd joint with about 25 oval sensoria distributed over the whole length; the relative length of joints as follows: III–72, IV–21, V–25, VI–48 (19+29). Rostrum slender, reaching the hind coxae. Cornicles extremely long, cylindrical, with numerous long and rather fine hairs intermixed with minute hairs on the apical portion. Caudal segment rounded, without a process. Veins normal; the 2nd oblique conspicuously curved and the 3rd twice forked; hind wings with 2 obliques not parallel; hooklets 3. Legs long and slender, with many long hairs.

Length of body—2.4 mm. Antenna—2.0 mm.
Cornicle—2.0 mm. Fore wing—2.75 mm.
Width of fore wing—1.0 mm.

Host.—*Meliosma rhoifolia.*

Distribution.—Formosa (Shinten).

Wingless and winged females have been collected by the author in June.

Eutrichosiphum lithocarpae **(Maki.)**

Trichosiphum lithocarpae **Maki.** **牧茂市郎** **臺灣農事報** No. 138, p. 344 (1917).

Maki, Entom. Mag. Kyoto, Japan, iv, pt. 1, p. 21 (1919).

Host.—*Lithocarpus* sp.

Distribution.—Formosa (Urai).

Subtribe *Cervaphidini.*

Cervaphis quercus **Takahashi.**

Zool. Mag. Tokio, p. 458 (1918).

Host.—*Quercus variabilis.*

Distribution.—Formosa (Taihoku); Japan (Tokio).

Hitherto unrecorded from Formosa.

In my opinion, *Anomalaphis* Baker does not belong to this subtribe, and *Cervaphidini* is closely related to *Trichosiphini* in the following characters:

(1) Head and pronotum of the wingless female not well defined, often fused together.

(2) Ocular tubercles of the winged form very prominently protuberant.

(3) Cornicles very long, projecting horizontally behind, provided with bristles.

(4) Caudal segment sometimes with a process.

(5) Spiracles sometime prominently protuberant.

(6) Oviparous females winged.

(7) 2nd obliques of fore wings curved.

Tribe *Callipterina.*

Key to subtribes.

(1) Eyes without ocular tubercles. ... ...Subtribe *Saltusaphidini.*
Eyes with ocular tubercles. ... ... (2)

(2) Antennae provided with many long, prominent hairs; anal plate not sinuted.... ... ... Subtribe *Chaitophorini.*
Antennae not provided with many long hairs; anal plate often bilobed. ... ... (3)

(3) Cornicles as long as or longer than wide. Subtribe *Callipterini.*
Cornicles much shorter than long. ... ... (4)

(4) Eyes of the wingless female very small and rudimentary. ... ... Subtribe *Neophyllaphidini.*

Eyes of the wingless female large. ... ... Subtribe *Phyllaphidini.*

Subtribe *Callipterini.*

(1) Cornicles nearly as long as wide ... ... *Callipterus* **Koch.**
Cornicles longer than wide. ... ... *Myzocallis* **Pass.**

Key to Formosan species of *Myzocallis.*

(1) Abdomen with prominent tubercles. ... ... (2)
Abdomen without prominent tubercles. ... *M. bambucifoliae* n. sp.

(2) Yellowish; abdomen with slender finger-like tubercles. ... (3)
Dark purplish or blackish; abdomen with large, stout tubercles.
... ... *M. bambucicola* n. sp.

(3) Head and thorax with prominent capitate hair. ... ...
... ... *M. querciformosanus* n. sp.
Head and thorax without capitate hairs. *M. pseudoalni* n. sp.

Myzocallis bambucicola n. sp. (PL. v, 2, figs. 1–7).

Black somewhat obscured by a purplish tinge. Antennae and legs white. Eyes dark red. Rostrum pale green. Tubercles on the dorsum and cornicles concolourous with the body. Cauda paler. Wings hyaline, slightly clouded at the base; stigma gray; veins colourless. Body broad, and widest at midlength of the abdomen, without hairs. Frontal tubercles very short. Antennae very long and slender, without hairs; the 3rd joint with about 5 small circular sensoria in a row near the base; the 4th very slightly imbricated; the relative length of joints as follows: III–51, IV–33, V–30, VI–49 (20+29). Rostrum very short and stout, not reaching the middle coxae. Abdomen on the dorsum with 6 pairs of blunt tubercles, the 1st 2 pairs of which are very large, and the last 2 are very small; in front of the cornicles there are very large, conspicuous tubercles. Cornicles much longer than wide, slightly constricted near the end. Cauda globular, constricted at the base, furnished with many long hairs. Anal plate bilobed. Legs long and very slender, with many

short hairs. Fore wings with typical veins, stigmatic vein being obsolete; hind wings with 2 obliques slightly divergent; hooklets 2.

Length of body—1.7 mm. Antenna—1.6 mm.
Fore wing—2.0 mm. Width of fore wing—0.9 mm.

Host.—*Dendrocalamus latiflorus.*

Distribution.—Formosa (Taihoku).

Like other species of *Myzocallis*, this interesting aphis is sporadic in habit, and jumps from the host when disturbed.

Myzocallis pseudoalni n. sp. (PL. vii, 1, figs. 1–5).

Winged viviparous female.

Yellow. Eyes red. Antennae yellow; apices of the 3rd, 4th and 5th joints, and the 6th, as well as the middle part of the 3rd, dusky. Dorsal tubercles on the abdomen concolourous with the body, but that on the 2nd abdominal segment at the apex dark and that on the 5th blackish. Cornicles yellow, the apices black. Cauda yellow. Wings along the veins clouded; stigma pale brown; veins brown or black. Legs yellow. Body furnished with a few hairs. Frontal tubercles very short. Antennae very slender, with a few very short hairs; the 3rd joint near the base provided with 6–7 small circular sensoria in a row; the 4th very slightly imbricated, without sensoria; the relative length of joints as follows: III–70, IV–44, V–43, VI–36 (16+20). Rostrum not reaching the middle coxae. Abdomen on each side with several very short blunt inconspicuous tubercles and along the longitudinal axis of the dorsum 4 large finger-like tubercles, of which the 1st 2 are subequal in size, the 3rd a little shorter than the 2nd, and the last the smallest. Cornicles much longer than wide, slightly constricted at midlength. Cauda globular, constricted at the base. Anal plate bilobed. Legs long and slender, with many short hairs.

Wings rather narrow; veins normal; hooklets 3.

Length of body—2.0 mm. Antenna—2.0 mm.
Fore wing—2.6 mm. Width of fore wing—0.9 mm.

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Host.—*Alnus* formosana.

Distribution.—Formosa (Taihoku).

Myzocallis querciformosanus n. sp.

Winged viviparous female.

Yellow. Eyes yellow. Antennae yellow, with the apices of joints blackish. Cornicles, cauda, and tubercles on the dorsum yellow. Wings hyaline; stigma and veins pale yellow. Legs pale yellow, apices of tibiae slightly dusky. Body narrow. Head with 3 pairs of very long capitate hairs, arising from short tubercles, between the antennae. Antennae long and slender, somewhat imbricated; the 1st joint much larger than the 2nd, distinctly convex on the inner side, with a moderately long stout capitate hair; the 3rd joint provided with about 5 circular sensoria in a row on the basal half and 4–5 short capitate hairs; the 4th joint lacking sensoria, without hairs; the relative length of joints as follows: III–54, IV–40, V–31, VI–50 (15+35).

Rostrum stout, reaching almost the middle coxae. Pronotum with a pair of capitate hairs, which are shorter than those on the head, at the middle near the front margin, and a pair of finger-like tubercles, which are shorter than those on the abdomen, at the middle near the hind margin. Mesonotum with 7 pairs of very long capitate hairs which are as long as those on the head or the basal two antennal joints taken together.

Wings narrow; stigma stout; stigmatic vein somewhat obsolete; upper branch of the 3rd oblique reaching the wing apex; hind wings with 2 almost parallel obliques; hooklets 5.

Abdomen without capitate hairs, but with many moderately long hairs on the dorsum and the underside; the 3 basal segments with a pair of large, finger-like tubercles at the middle of the dorsum, of which the front 2 pairs equal in size, and somewhat shorter than the hind one; 4 small lateral blunt tubercles present in front of the

cornicles. Cornicles longer than wide, narrowed at the middle, about 2.4 times as long as wide at midlength. Cauda globular, about as wide as the cornicle constricted not strongly at the base, with 2 pairs of very long bristles which are not capitate. Anal plate somewhat deeply bilobed, with many normal bristles.

Legs slender, with many short capitate and normal hairs.

Length of body—1.6 mm. Antenna—0.95 mm.

Fore wing—2.3 mm.

Host.—*Quercus dentata.*

Distribution.—Formosa (Taichyu).

Many specimens were collected by Mr. K. Sawada in March, 1921.

This species is distinct from all the species of *Myzocallis* known to me by the very prominent capitate hairs on the head and by the antennal structure.

Myzocallis bambucifoliae n. sp.

Winged viviparous female

Pale yellow. Eyes pale yellowish green. Antennae pale yellow, basal 2 joints blackish, basal third of the 3rd joint and apices of the 3rd, 4th and 5th black, the 6th dusky. Head with a longitudinal brown line. Pronotum narrowly brown at each side, with a longitudinal brown line at the middle. Mesonotum slightly brownish at the front angle, with a pair of longitudinal brown lines. Metanotum with a pair of black patches at the middle. The 1st—7th abdominal segments with a pair of distinct, black markings at the middle of the dorsum, the 8th segment with a black spot on the dorsum. Cornicles and cauda yellow. Wings hyaline; stigma pale yellow, veins brown or dark brown. Legs pale yellow; tarsi dusky.

Body oblong, without prominent hairs. Head as long as the prothorax. Frontal tubercles absent. Antennae long and slender, with a few very small hairs; the 3rd joint with 5 or 6 very small,

transversely oval sensoria in a row from the base; the 4th joint lacking sensoria; the relative length of joints as follows: III—96, IV—64, V—58, VI—65 (30+35). Rostrum very short, reaching a little beyond the front coxae. Abdomen without distinct tubercles, but with 3 very short, blunt ones on the side. Cornicles rather short, almost as long as wide, constricted at the middle, with a long bristle near the base. Cauda globular. Anal plate distinctly bilobed. Wings normal, not narrow; stigma not wide; stigmatic vein present; hind wings with 2 not parallel obliques; hooklets 2. Legs with many moderately long bristles.

Length of body—2.8 mm. Antenna—3.0 mm.
Fore wing—3.15 mm.

Host.—*Bambusa sp.*, attacking the leaf.

Distribution.—Formosa (Taihoku).

This species is very closely related to *Myzocallis arundicolens* (Clark), but differs from it in the colur of the antennae and the abdomen.

Callipterus kohawaluokalani **(Kirk.)**

Myzocallis kahawaluokalani, **Kirkaldy,** Proc. Hawaii Ent. Soc., i, pt. 3, p. 101 (1907).

Monellia lagerstroemeae, **Takahashi,** Zool. Mag. Tokio, xxxii, No. 378, p. 118 (1920).

Hosts.—*Lagerstroemia* spp.

Distribution.—Formosa (Taihoku); Japan (Tokio).
Hawaii (Kirkaldy).

Hitherto unrecorded from Formosa.

Subtribe *Phyllaphidini.*

Shivaphis celti **Das** (PL. xi, 1.).

Mem. Ind. Mus. vi, pt. 4, p. 246, pl. xxix, figs. 1–10 (1918).

Hosts.—*Celtis* spp.

Distribution.—Formosa (Taihoku).

India (Das); Ceylon (v. d. Goot).

Hitherto unrecorded from Formosa.

This species is very closely related to *Shivaphis celticolens* (Essig et Kuwana). In *S. celticolens*, the brachypterous form (immediate) appears very commonly, but in the present species, this form is not found.

The winged viviparous females of *Shivaphis celti* Das are very common from the spring onwards throughout the autumn, but they are extremely rare in the winter, when usually only the wingless viviparous females may be seen.

I have collected only a few males of the present species in December 1920 and Januar 1921 in Taihoku, but no oviparous females have been discovered.

Subtribe *Saltusaphidini.*

Phyllaphoides n. g.

Winged form : body oblong, soft, without prominent hairs, but with white cottony secretions. Eyes prominent, but without ocular tubercles. Frontal tubercles absent. Antennae of 6 joints, as long as the body; sensoria circular; spur as long as the base. Rostrum not long. Thorax normal. Wings hyaline; the 3rd oblique twice forked; hind wings with 2 obliques. Cornicles very short, much wider than long, scarcely more than pores. Cauda globular, constricted at the base. Anal plate bilobed. Legs slender; tarsi without limpid empodial hairs.

Closely related to *Thripsaphis* Gillette, from which it is distinguished by the structure of head and by the body having white cottony secretions, but lacking spine-like hairs.

Type.—*Phyllaphoides bambucicola* n. sp.

Phyllaphoides bambucicola n. sp. (PL. vi, 1,)

Winged viviparous female.

White; mesothorax pale yellow. Eyes black. Antennae white,

with the apices of joints dusky. Legs white. Wings hyaline; stigma and veins colourless.

Body soft, oblong, with some cottony wax and a few short fine hairs. Head as long as the prothorax; vertex not prominent. Eyes large, without ocular tubercles.

Frontal tubercles absent. Antennae with a few very minute hairs; the 3rd joint with 3–4 small circular sensoria in a row near the base; apical sensoria of the 5th very small; the 6th scarcely imbricated; the relative length of joints as follows: III—69, IV—47, V—41, VI —39 (21+18). Rostrum very short, reaching the front coxae. Body without dorsal and lateral tubercles. Fore wings rather narrow; stigmatic vein obsolete; the 3rd oblique twice forked; hind wings with 2 obliques parallel; hooklets 2; wings carried normally when at rest. Cornicles very short, little more than pares. Cauda globular, constricted at the base. Anal plate bilobed. Legs slender, with some minute hairs; hind legs with cottony wax, the femora somewhat dilated; tarsi very long; claws very long and nearly straight.

Length of body—1.6 mm. Antenna—1.5 mm.

Fore wing—2.0 mm. Width of fore wing—0.85 mm.

Host.—*Bambusa* sp., attacking the leaf.

Distribution.—Formosa (Taihoku).

This aphis is found on the underside of the *Bambusa*—leaf, and does not jump from the host when disturbed, but walks rather actively.

Subtribe *Neophyllaphidini*.

Neophyllaphis, **Takah.,** in my opinion, has every claim to be recognised as a distinct subtribe. It may be near the *Phyllaphidini*, but is distinguished from the latter as follows:

Neophyllaphidini new subtribe.

Body soft, without hairs, but with a pulverulence. Frontal tubercles absent. Antennae 6-jointed; spur very small; sensoria on the 3rd joint transversely narrow.

Eyes of the wingless form very small and rudimentary; those in the winged form large, with ocular tubercles. Body without tubercles. Cornicles much wider than long. Wings carried normally when at rest; the 3rd oblique twice forked. Cauda constricted at the base. Anal plate slightly sinuated. Oviparous females winged.

Neophyllaphis podocarpi **Takah.** (PL. ii, 2, figs. 6–9)

Canad. Entom. p. 19 (1920).

Wingless viviparous female.

Dark reddish purple. Eyes black. Legs pale brown. Antennae pale brown, apices of the joints slightly infuscated.

Body soft, narrow and somewhat flattened; slightly pulverulent, but not hairy. Head large, with a pair of waxpores on the dorsal surface; vertex very wide. Eyes very minute, rudimentary. Frontal tubercles lacking. Antennae without hairs; the 3rd joint lacking sensoria; apical sensoria of the 5th small, circular; the relative length of joints as follows: III—34, IV—14, V—15, VI—15 (12+3).

Rostrum long and slender, reaching beyond the hind coxae. Cornicles very short, much wider than long. Cauda long, with the apex rounded, conspicuously constricted at the base and slightly so at the middle. Anal plate slightly sinuated. Legs moderately long and slender, with a few short hairs; limpid empodial hairs absent.

Length of body—1.7 mm. Antenna—0.8 mm.

Winged viviparous female.

I have formerly described the male as the winged viviparous femal in the "Canadian Entomologist" (p. 19, 1920) and now correct this as follows :

General colour dark reddish purple. Head, eyes and thorax black. Antennae dusky. Wings hyaline, stigma and veins pale brown or gray. Legs pale blackish brown. Cornicles black. Cauda pale brown.

Body soft, narrow, with some powder and no hairs. Eyes large, with ocular tubercles. Frontal tubercles lacking. Rostrum, cornicles, cauda and legs almost as in the wingless female. Antennae lacking hairs; the 3rd joint with 40–45 long encircling transverse sensoria regularly distributed over the whole length; the 4th lacking sensoria; apical sensoria of the 5th circular and very small; the relative length of joints as follows: III—71, IV—28, V—28, VI—25 (20+5).

Wings normal; the 3rd oblique twice forked; hind wings with 2 obliques; hooklets 2.

Length of body—1.17 mm. Antenna—1.1 mm.
Fore wing—2.5 mm. Width of fore wing—1.0mm.

Host.—*Podocarpus chinensis*.

Distribution.—Formosa (Taihoku); Japan (Tokio, Chiba).

Hitherto unrecorded from Formosa.

This peculiar aphis is very common in Taihoku, and many winged and wingless viviparous females may be seen at almost all times. Near Tokio, the sexual forms occur in the spring, summer and autumn rather commonly, but in Formosa they appear to be quite rare; since I have collected only a winged oviparous female in Taihoku in May.

The eyes of the wingless form of this species consist of three facets. Many immediate forms often occur, however, in which the immediate nature is indicated only by the eyes which have the beginnings of compound eyes, such as are found in the winged form. But there never are complete compound eyes.

Subtribe *Chaitophorini*.

Periphyllus formosanus n. sp. (PL. xiv, 2, figs. 11–13).

Wingless viviparous female.

Reddish brown, thorax somewhat blackish. Eyes dark brown. Antennae brownish yellow; apex of the 5th joint, and the 6th black. Cornicles and cauda dark brown. Legs brownish yellow, apices of tibiae and hind femora blackish; tarsi black.

Body with many very long rather stout hairs. Antennae with some very long hairs; the 3rd joint slightly imbricated on the apical portion, without sensoria; the 6th joint with 0–2 hairs; the relative length of joints as follows: III—86, IV—42, V—35, VI—68 (16+52). Rostrum short, not reaching the middle legs. Cornicles short and rather stout, very slightly longer than wide, not as long as those of the winged form. Cauda very short, much wider than long, not constricted at the base, with the posterior margin broadly rounded.

Legs rather stout, with many very long hairs; tarsi imbricated, with 2 transparent empodial hairs.

Length of body—2.5 mm. Antenna—1.8 mm.

Winged viviparous female.

Head, eyes, thorax and cornicles black. Antennae pale brown, the apical halves dusky. Abdomen reddish brown, with 6 blackish bands on the dorsum. Legs pale brown; apices of fore tibiae, apical halves of middle and hind femora and tibiae, and tarsi black. Wing-veins brown, stigma pale brown. Body with many very long hairs. Antennae with some very long hairs; the 3rd joint provided with 45–50 circular or oval sensoria of various size scattered over the whole lengh; the 4th joint with 2–5 sensoria in a row on the basal half; the 5th joint with an apical sensoria; the 6th joint with 0–1 long hair; the relative length of joints as follows: III—110, IV—48, V—48, VI—80 (18+62).

Rostrum rather stout, not reaching the middle legs. Wings with the 3rd oblique twice forked, obsolete at the base; hind wings with 2 not parallel odliques; hooklets 5.

Cornicles twice as long as wide, broadest at the base, shorter than the hairs on the abdomen, reticulated. Cauda almost as in the wingless form. Legs long and slender, with many very long hairs; tarsi imbricated, with transparent empodial hairs.

Length of body—2.8 mm. Antenna—2.0 mm.

Fore wing—4.35 mm.

Host.—*Acer sp.*

Distribution.—Formosa (Sozan)

Many winged and wingless females were collected by the auther in Feburary 1921, when no dimorphs were discovered. But in June 1921 only the dimorphs margined with lamellae were collected.

Tribe *Lachnina.*

Key to subtribes.

(1) Body elongate. ... ...(2)
Body not elongate. ... ...(4)

(2) Males without rostrum. ... ...Subtribe *Stomaphidini.*
Males with well developed rostrum.... ... ...(3)

(3) Cornicles on hairy cones. ... ... Subtribe *Nippolachnini.*
Cornicles not on hairy cones ... ... Subtribe *Eulachnini.*

(4) Eyes of the wingless female very small or rudimentary... ...
... ...Subtribe *Anoecini.*
Eyes of the wingless female large ... ...Subtribe *Lachnini.*

Subtribe *Stomaphidini.*

Body elongate. Eyes of the winged female large, with ocular tubercles; but those of the wingless female very small. Rostrum of the female much longer than the body, but that of the male rudimentary. Cornicles situated on hairy cones. The 3rd oblique once or twice forked. Males always wingless. The 9th abdominal segment with a small lateral tubercle.

From Japan three species of this subtribe, *Stomaphis quercus*, L., *S. yanonis* Tak., and *S. pini Tak.* have been recorded, but in Formosa no species has been found.

Subtribe *Nippolachnini* new.

This subtribe is closely related to *Anoecini*, but differs from it as follows :

(1) Head divided.

(2) Eyes of the wingless female large, not rudimentary; ocular tubercles always absent.

(3) Males winged.

No species of *Nippolachnus*, the type-genus of this subtribe, occurs in Formosa.

Subtribe *Lachnini*.

(1) Stigmatic vein short and straight. ... ...(2)
Stigmatic vein of moderate length and curved. ... ... *Tuberolachnus* **Mordw.**

(2) The 3rd oblique twice branched. ... ... *Dilachnus* **Baker.**
The 3rd oblique not twice branched... ... ... *Lachnus* **Burm.**

Lachnus thujafoliae (**Theobald**.) (PL. X, 2, figs. 1–4).

Lachniella thujafoliae, **Theob.** Bull. Ent. Research, iv, pp. 335–336 (1914).

Host.—*Thuja orientalis*.

Distribution —Formosa (Taihoku); Japan (Tokyo);
Africa (Theobald).

Hitherto unrecorded from Formosa.

Key to Formosan species of *Dilachnus*.

(1) The 4th antennal joint of the wingless viviparous female with 1 sensoria. ... ... *D. pinidensiflorae* (**Essig** et **Kuw.**)
The 4th antennal joint of the wingless viviparous female without sensoria. ... ...*D. sp.*

Dilachnus pinidensiflorae (**Essig** et **Kuw.**)

Lachnus pinidensiflorae, **Essig** and **Kuwana,** Proc. Calif. Acad. Sc. viii, No. 3, p. 99 (1918).

Host.—*Pinus sp.*

Distribution.—Formosa (Taihoku); Japan (Tokio).

Hitherto unrecorded from Formosa.

Many winged viviparous females were colleted in February 1921.

Dilachnus sp.

Wingless viviparous female.

Blackish brown. Head, eyes, prothorax and legs black. Antennae black, with the base of the 3rd joint blackish brown. Cornicles and cauda black. Body oval, broadest at midlength of the abdomen, with many stout bristles and slightly covered with a powder. Eyes with ocular tubercles, Antennae with many long stout bristles; the 3rd joint lacking sensoria; the relative length of joints as follows: III—47, IV—22, V—26, VI—22.

Rostrum slender, reaching far beyond the hind coxae. Cornicles situated on broad hairy cones. Cauda very short, much wider than long, the posterior margin broadly rounded, with many long hairs. Legs large and very stout, with many very stout long bristles; the 1st joint of the hind tarsi equal to half the 2nd.

Length of body—3.0 mm. Antenna—1.4 mm.

Host.—*Pinus sp.*, attacking the twig.

Distribution.—Formosa (Taihoku).

The winged from has never been collected.

Tuberolachnus viminalis (**Fansc.**)

Aphis viminalis, **Fonscolombe,** Ann. Soc. Ent. France, x, p. 184 (1841).

Lachnus viminalis, **Backton,** Monog. Br. Aphid., iii, pp. 53–57 (1880); **Theobald,** Bull. Ent. Research, vi, p, 144 (1915); **Matsumura,** Jour. Coll. Agr. Sapporo, vii, pt. 6, p. 355 (1917).

Tuberolachnus viminalis, **Mordwilko,** Ann. Mus. Zool. Acad. Imp. Des Sc. Tome xiii, p. 374 (1908); **Essig,** Pom. Coll. Jour. Entom. iv,

p. 774 (1912); **Das,** Mem. Ind. Mus., iv, p. 257 (1918); **Swain,** Univ. Calif. Pub. tech. Bull. Coll. Agr. Agr. Expt. St. iii, No. 1, p. 45 (1919).

Pterochlorus viminalis, **Baker,** U. S. Dept. Agr. Bull. 826, p. 18 (1920).

牧茂市郎　林業試驗場特別報告（台北） No. 1, p. 34, pl. 6. A. **（大正四年）**

Hosts.—*Salix spp.*

Distribution.—Formosa (Taihoku); Japan.

India (Das); Africa (Theobald); Europe; North America.

In my opinion, *Tuberolachnus* Mordw. differs from *Pterochlorus* Rond. in having very soft wings.

Subtribe *Eulachnini.*

Eulachnus piniformosanus n. sp. (PL, XIV, 2, figs. 14–16)

Wingless viviparous female.

Dark green. Eyes dark red. Antennae blackish brown, with the last 2 joints black. Legs pale blackish brown. Body much elongated, very narrow, provided with many long stout black bristles which arise from a small black patch, slightly pulverulent.

Eyes outstanding, almost lacking ocular tubercles. Head divided, as long as the prothorax. Antennae with many long bristles; the 3rd joint lacking sensoria; the 4th joint with a sensoria of median size at the apex; the 5th joint with a large apical sensoria; the 6th joint with a large sensoria at the middle of the spur and a group of much smaller ones below; the relative length of joints as follows: III—67, IV—31, V—35, VI—38 (22+16).

Rostrum reaching a little beyond the hind legs. Mesothorax as long as the prothorax, longer than the metathorax. Abdomen broadest at the middle. Cornicles minute, not situated on hairy cones. Cauda broad, semicircular. Legs very long, with many long stout

bristles; the 1st joint of the hind tarsi as long as half the 2nd.

Length of body—2.0 mm. Antenna—0.9 mm.

Winged viviparous female.

Colour almost as in the wingless from. Wings hyaline, stigma and veins gray. Body much elongated, covered with many very long bristles. Antennae slender, somewhat imbricated, covered with many very long bristles; the 3rd joint with 1 or 2 circular sensoria at the tip; the 4th joint with a sensoria at the apex; primary sensoria very large; the relative length of joints as follows: III—48, IV—20, V—27, VI —24 (16+8).

Wings long and slender; stigma large; stigmatic vein straight, reaching the wing apex; the 3rd oblique faintly indicated, only once forked; hind wings with 2 faintly indicated obliques which are divergent; hooklets 3. Eyes, rostrum, cornicles and cauda almost as in the wingless from. Legs very long and slender. covered with many very long bristles.

Length of body—1.73 mm. Antenna—0.9 mm.

Fore wing—2.1 mm.

Host.—*Pinus sp.*, attacking the leaf.

Distribution.—Formosa (Taihoku).

Closely related to *E. tuberculostemmata* (Theob.), but differs from it in having sensoria on the 3rd antennal joint and more hairs on the head.

Dr. Wilson has described only the sexual forms of *E. thunbergii* Wilson from Japan, the viviparous forms of which are not known yet; and it is possible that *E. piniformosanus n. sp.* may be a synonym of Wilson's species.

E. agilis (**Kalt.**), recorded from South China by Prof. v. d. Goot, has never been collected in Formosa.

In my opinion *E. tuberculostemmata* (Theob.) from Africa might be a synonym of *E. rileyi* Williams from North America.

Subtribe *Anoecini.*

Aiceona new genus.

Body with many long fine hairs. Head not divided. Eyes large, ocular tubercles rather small; those of the wingless viviparous female very small. Frontal tubercles absent. Antennae covered with hairs, nearly not imbricated at all, 6-jointed, spur much shorter than the base; sensoria cirucular or oval. Fore wings with the 3rd oblique twice forked; stigma short; hind wings with 2 obliques. Cornicles situated on broad hairy cones. Cauda very short, rounded. Tarsi normal.

Type—*Aiceona actinodaphni* n. sp.

This genus differs from *Anoecia* Koch in the wing-veins.

Aiceona actinodaphni new species (PL. XIII, 2, figs. 2-3)

Wingless viviparous female.

Black. Body broad and oval, slightly covered with a white powder, and many long fine hairs present.

Head small. Eyes very small. Antennae short, 6-jointed; the 3rd joint without sensoria; the relative length of joints as follows : III—50, IV—24, V—25, VI—30 (10+20).

Length of body—2.mm. Antenna—0.9 mm.

Winged viviparous female.

Black. Eyes and antennae black. Wings dusky, veins and stigma black.

Body oblong, covered with many long fine hairs. Head broader than long, not divided. Eyes large; ocular tubercles rather small. Frontal tubercles absent. Antennae with many long fine hairs, 6-jointed; the 3rd joint with 27, the 4th 12 and the 5th 7+1 protruding circular sensoria scattered over the whole length; the relative length of joints as follows: III—55, IV—30, V—27, VI—32(22+10).

Rostrum reaching the hind coxae. Prothorax and abdomen

without lateral or dorsal tubercles. Wings not soft; fore wings with the 3rd oblique twice forked, subcosta with about 35 long fine hairs in a row along the whole length; stigma short and stout; stigmatic vein curved; the 2nd oblique nearly straight; hind wings with 2 divergent obliques; hooklets 3. Abdomen with white wax on the side. Cornicles very short, situated on broad hairy cones. Cauda very short and rounded.

Legs moderately long, with many long fine hairs; tarsi normal.

Length of body—2.0 mm. Antenna—1.1 mm.

Fore wing—2.5 mm. Width of fore wing—0.85mm.

Host.—*Actinodaphne pedicellata Hay.*

Distribution.—Formosa (Kwanshirei, Urai).

I collected many specimens on the twigs and leaves in January 1921.

Tribe *Hormaphidina.*

Key to subtribes.

(1) Vertex of the wingless female with a pair of horn-like tubercles. ... ...Subtribe *Oregmini.*

Vertex of the wingless female without a pair of horn-like tubercles ... ...Subtribe *Hormaphidini.*

Subtribe *Oregmini.*

(1) Body of the wingless female soft. ... ...*Oregma* **Buckt.**

Body of the wingless female hard. ... ... *Cerataphis* **Licht.**

Key to Formosan species of *Oregma.*

(1) Body of the wingless viviparous fomale conspicuously convex, without well developed waxglands... ... *O. bambucicola* **n. sp.**

Body of the wingless viviparous female not conspicuously convex, with well developed waxglands. ... ... (2)

(2) Wingless viviparous females densely covered with cottony secretions ... ... *O. lanigera* **(Zehnt.)**

Wingless viviparous females slightly covered with a powder. (3)

(3) Green. Winged females with 35–40 annulations on the 3rd antennal joint ... ... *O. bambucifoliae* **n. sp.**

Not Green. Winged females with 23 annulations on the 3rd antennal joint. ... ... *O. panicola* **n. sp.**

Oregma lanigera (**Zehnt.**) (PL. XII, 2, figs. 1–4).

Ceratovacuna lanigera, **Zehntner,** Arch. voor de Java-Suikerindustrie, V, p. 553 (1897); **Matsumura,** Die schäd. Nutz. Zuck Ins. Formosa p. 12, pl. ix, fig. 3 (1910).

Cerataphis saccharivora, **Matsumura,** Essays for Nawa, p. 57, pl. xi, fig. 6 (1917).

Oregma lanigera, **van der Goot,** Contrib. Fauna Indes-Neerland. I, 3. p. 190 (1917).

Host.—*Saccharum officinarum*; *Miscanthus* spp.

Distribution.—Formosa (Taihoku, Tainan, Ako, Taichyu).

Java; Ceylon (Schouteden).

This aphis is one of the most important injurious insects in our island. The winged viviparous females can be seen at almost all times and no sexuales occur through the year.

Dr. Matsumura's species is undoubtedly a synonym of *O. lanigera* (Zehnt.)

Oregma bambucifoliae n. sp. (PL. viii, 1, figs. 1–10).

Wingless viviparous female.

Body yellowish green or fresh green, with a pair of longitudinal dark green patches on the dorsum, which are often interrupted at mid-length. Eyes black. Antennae and legs pale green or white. Body soft, broad, flat, only slightly convex; sparsely covered with a white secretion on the dorsum and provided with a few long hairs. Head small, not separated from the prothorax; horns finger-like, not pointed, nearly as long as the 2 basal antennal joints taken together.

Antennae very short, 4-jointed, with 3-4 short hairs; apical sensoria of the 3rd joint very small; the relative length of joints as follows : III—20...25, IV—14 (10+4). Rostrum very short, not reaching the middle coxae. Eyes very minute. Abdomen broadest at midlength. Cornicles represented only by pores. Cauda much wider than long and constricted at the base, with some hairs. Anal plate distinctly bilobed. Legs short and slender, with some moderately long fine hairs; each tarsal joint with 2 long capitate hairs.

Length of body—1.7 mm. Antenna—0.5 mm.

Winged viviparous female.

Head, eyes, antennae and mesothrax black. Prothorax yellowish green, with a dark green patch on the side of the pronotum.

Abdomen yellowish green, with a pair of longitudinal dark green patches on the dorsum; the area between the cornicles dark green. Cornicles and cauda pale yellowish green. Legs dusky, with the apices of femora and tibiae, and the tarsi black.

Stigma and veins gray. Body flat, broadest between the cornicles, with a few short hairs and without waxy secretions. Head a little shorter than the prothorax; tubercles very short, much shorter than, or nearly as long as, the 1st antennal joint. Eyes large; ocular tubercles prominent.

Antennae short and stout, 5-jointed; the 1st joint much larger than the 2nd; the 3rd with 35-40, the 4th 14-16, the 5th 15, annulations, regularly placed on the whole length; the relative length of joints as follows : III—52, IV—22, V—25.

Rostrum very short, reaching the front coxae. Mesothorax of the typical Oregma. Cornicles very short. Cauda very short, slightly constricted at the base. Anal plate bilobed, with some fine hairs. The 1st and 2nd obliques almost united at their bases; the 3rd more slender than the 1st, obsolete at the base and only once forked; hind wings with 2 obliques neary parallel: hooklets 2. Legs short and

slender, with some short hairs; each tarsal joint provided with 2 long capitate hairs; the 2nd tarsus more than thrice as long as the 1st.

Length of body—1.7 mm. Antenna—0.65 mm.

Fore wing—2.6 mm. Width of fore wing—1.15mm.

Host.—*Bambusa spp.*, attacking the leaf.

Distribution.—Formosa (Taihoku).

This beautiful aphis is very abundant in Taihoku in the spring and winter, but in the summer it is quite rare.

The winged forms appear from April to May.

The wingless viviparous female has well developed waxglands of "*insularis*-type" on the sides of the thoracic and abdominal segments. Each group is composed of 4–6 small circular waxglands which are sometimes slightly narrowed transversely.

In *Oregma bambucicola* Takah. the waxglands are not well developed.

Oregma bambucicola n. sp.

(PL. viii, 1, fig. 11 & PL. viii, 2, figs. 1–5)

Wingless viviparous female.

Dark purple. Head yellowish brown. Eyes black. Antennae pale brown, with the apex black. Legs yellowish brown, the tarsi black. Cauda paler.

Body soft, oval, conspicuously convex, furnished with many moderately long fine hairs; not or but slightly covered with waxy secretions on the sides and dorsum; a little powder on the underside of the body.

Head fused with the prothorax. Head and pronotum with numerous minute pores; mesontum with 4 large groups of minut pores; dorsum of the abdomen with some small groups of minute pores. Tubercles on the head large, as long as or longer than the 1st antennal joint, somewhat curved upwards, somewhat expanded

towards the base, and somewhat sharply pointed. Antennae 4 or 5-jointed, with long fine hairs; apical sensoria of the 3rd joint minute; the relative length of joints as follows: I—9, II—8, III—25, IV—18. Rostrum nearly reaching the middle coxae. Abdomen broadest between the cornicles. Cauda much wider than long, constricted at the base. Anal plate bilobed, with many long hairs.

Legs rather long and slender, with many long hairs; the 2nd tarsus long, with some very long hairs.

Length of body—2.2 mm. Antenna—0.4 mm.

Host.—*Bambusa* sp., attacking the young shoot.

Distribution.—Formosa (Taihoku).

The nymphs, especially the younger ones, have the habit, when disturbed, of elevating the posterior pair of legs as if to ward off the offending object.

This habit may be seen very commonly in *Macrosiphum*, *Pterochlorus*, etc., but in the *Hormaphidina* it is quite rare.

The winged forms have never been collected.

Oregma panicola n. sp.

Described from specimens preserved in alcohol.

Wingless viviparous female.

Brownish black. Body slightly convex, almost without hairs. Head and prothorax fused together. Head with a pair of small blunt horns which are as long as the 2nd antennal joint, longer than wide.

Antennae very short, 4-jointed; the 1st joint a little larger than the 2nd; the 3rd joint almost as long as the basal 2 joints taken together; the 4th joint as long as the 3rd.

Rostrum very stout, not reaching the middle legs. Cornicles much wider than long. Cauda much wider than long, constricted at the base. Anal plate bilobed.

Length of body—1.5 mm.

Winged viviparous female.

Body oblong, almost without hairs. Eyes large, with small ocular tubercles. Head with a pair of minute blunt tubercles which are hardly visible.

Antennae very short; the 3rd joint with 23–24, the 4th 7–10, the 5th 10–11 annulations; the relative length of joints as follows : III —47, IV—18, V—25.

Rostrum not reaching the middle coxae. Fore wings with the 3rd oblique once forked, which is obsolete at the base and more slender than the 1st; the 1st and 2nd obliques united at their bases; stigma large; hind wings with 2 not parallel, long obliques; hooklets 2.

Cornicles very short, much shorter than those of the wingless form. Cauda and anal plate almost as in the wingless form. Legs slender, with some moderately long hairs.

Length of body—1.7 mm. Antenna—0.65 mm.

Fore wing—3.3 mm.

Host.—*Panicum patens.*

Distribution —Formosa (Taihoku, Urai).

This aphis is distinguished from *O. panici* v. d. Goot by the antennal structure.

The wingless viviparous female of *O. panicola* n. sp. has 3–6 circular wax glands on each side of the thoracic and abdominal segments and 9 on the middle of the dorsum of the 8th abdominal segment.

Cerataphis lataniae (**Boisd.**)

Coccus lataniae, **Boisd,** Ent. horticole, p. 355, figs. 49–50 (1867).

Boisduvalia lataniae, **Signoret,** Ann. Ent. Soc. France, (4) viii, p. 400, pl. x, figs. 2, 2A (1868).

Cerataphis lataniae, **Lichtenstein,** Bull. Ent. Soc. France, II, p. 17 (1882); **Buckton,** Monog. Brit. Aphid, iv, p. 198, pl. cxxxiv (1883); **Embleton,** Linn. Soc. Jour. Zool. xxiv, pp. 90–106, pl. xii (1903); **Fullaway,** Ann. Rept. Hawaii Agr Expt. St., p. 44 (1910); **van der**

Goot, Contrib. Fauna Ind. Neerland. i, iii, p. 169 (1917); **Matsumura,** Collect. Essays. for Nawa, p. 58 (1917).

Ceratovacuna brasiliensis, **Hempel,** Ann, Mag. Nat. Hist. ser. 7, viii, p. 384 (1901).

牧茂市郎　林業試驗場特別報告 No. 1, pl. 7 B, p. 36. (**大正四年**)

Hosts.—*Latania* spp.; *Cocos* sp.

Distribution.—Formosa; India (Buckton); Malay (Embleton); Java (v. d. Goot); Hawaii (Fullaway): Brasil (Hempel); North America; Europe.

Subtribe *Hormaphidini.*

(1) Wingless form provided with distinct legs and antennae ... ...*Aleurodaphis* **v. d. Goot.**

Wingless form often not provided with distinct legs and antennae. ... ... *Astegopteryx* **Karsch.**

Aleurodaphis blumeae **v. d. Goot.**

Contrib. Fauna Indes Neerland. 1, 3, p. 240 (1918); **Baker,** U. S. Dept. Agr. Bull. 826, p. 68, pl. XVI, A—E (1920).

The Formosan specimens exactly agree with the Javanese *A. blumeae*, except that in the former, I have examined, the antennae are only 4-jointed.

Host.—*Blumea chinensis.*

Distribution.—Formosa (Taihoku); Java (v.d.G.).

Collected by Mr. E. Kurosawa in May 1921.

Hitherto unrecorded from Formosa.

Key to Formosan species of *Astegopteryx.*

(1) The 3rd antennal joint with 35 annulations... *A. giganteum* n. sp.
The 3rd antennal joint with 17–24 annulations. ... ... (2)

(2) Wings along the veins infuscated... ... ... *A. quercicola* n. sp.
Wings along the veins not infuscated... ... *A. styracicola* n. sp.

Astegopteryx giganteum n. sp. (PL. xiv, 2, figs. 6–10).

Winged viviparous female.

Described from only a single specimen.

Body black, almost lacking hairs. Head small, without hornlets. Eyes large, with distinct ocular tubercles. Antennae short and stout; the 3rd joint with 35, the 4th 17 and the 5th 11 annulations; the relative length of joints as follows : III—39, IV—21, V—14.

Rostrum very short, not reaching the middle coxae. Mesothorax very large. Wings ample, dusky, infuscate on the basal area; the 1st oblique somewhat stouter than the 2nd, the 1st and 2nd obliques united at their bases; the 3rd oblique once forked, obsolete at the base, as stout as the stigmatic vein; subcosta with 12–16 minute circular sensoria over the whole length and 7 very minute sensoria near the base; hind wings with 2 divergent obliques; hooklets 5.

Cornicles very short, represented by pores. Spiracles slightly protuberant. Cauda wider them long, very slightly constricted at the base; with some bristles. Anal plate bilobed, with some bristles. Legs slender, with many hairs; the 2nd tarsus with 2 long capitate hairs.

Length of body—2.0 mm. Antenna—0.75 mm.

Fore wing—3.0 mm. Width of fore wing—1.2 mm.

Host.—*Ficus retusa ?*

Distribution.—Formosa (Taihoku).

Only a specimen was collected on a leaf of *Ficus retusa* in May, 1920 by the author.

This species is easily distinguished from other species of *Astegopteryx* by the number of the antennal sensoria.

Astegopteryx quercicola n. sp.

Winged viviparous female.

Described from specimens preserved in alcohol.

Head black. Eyes blackish brown. Antennae pale blackish brown. Mesothorax blackish brown. Abdomen yellowish brown. Legs dark yellowish brown. Wings along the 1st and 2nd obliques

somewhat infuscate; clouded border of the 1st oblique broader than that of the 2nd. Body without hairs and wax. Head very small, lacking horns. Eyes large; ocular tubercles very small. Antennae short and stout; the 3rd joint with 22–24, the 4th 10, and the 5th 9 annulations; the relative length of joints as follows : III—53, IV—26, V—21. Rostrum very short, reaching a little beyond the front coxae. Wings ample; the 1st and 2nd obliques neary united at their bases; the 3rd more slender, obsolete at the base; stigma large; stigmatic vein reaching the wing apex; hind wings with 2 divergent obliques; hooklets 2. Cornicles represented only by rings. Cauda very short, wider than long, constricted at the base, with some hairs. Anal plate deeply bilobed, with many long hairs. Legs short, but rather slender, with a few short hairs; the 1st tarsus with 2 capitate hairs; the 2nd tarsus rather short, with 4 long capitate hairs.

Length of body—1.4 mm. Antenna—0.7 mm.
Fore wing—2.7 mm. Width of fore wing—1.7 mm.

Host.—*Quercus variabilis.*

Distribution.—Formosa (Taihoku).

This species may be easily distinguished from *Astegopteryx javensis* Takah. (syn. *Schizoneuraphis distylii* v. d. Goot) by the wing-veins.

The wingless female of this species is aleyrodiform, being cemented to the leaf. The winged from occurs only in the winter, and does not alternate the host.

Astejopteryx styracicola n. sp.

Winged viviparous female.

Described from specimens preserved in alcohol.

Head and mesothorax black. Eyes reddish brown. Antennae dusky. Abdomen and legs yellowish brown. Wing-veins and stigma yellowish brown. Body oblong, without prominent hairs. Head without horns. Eyes very large ; ocular tubercles very small. Antennae slender, 5-jointed; the relative length of joints as follows :

III—32, IV—12. V—10; sensoria distributed as follows: III—17...23, IV—7...8, V—5...6.

Rostrum reaching beyond the front legs. Mesothorax large. The 1st and 2nd obliques of the fore wing united at their bases; the 3rd once forked, obsolete at the base; hind wings with 2 divergent obliques; hooklets 2 or 3.

Cornicles absent. Cauda short, much wider than long, with some hairs. Anal plate not bilobed. Legs slender, with some short hairs; the 1st tarsal joint very short, the 2nd with 2 long capitate hairs.

Length of body—1.5 mm. Antenna—0.65 mm.

Fore wing—2.4 mm. Width of fore wing—1.0 mm.

Host.—*Styrax formosanum.*

Distribution.—Taihoku (Kannon-zan).

This aphis is distinguished from *A. nekoashi* Sasaki by the number of the antennal sensoria.

The aphis produces very large galls on the host plant.

Tribe *Pemphigina.*

Key to subtribes.

(1) Cornicles absent ... ...(2)

Cornicles present ... ...(3)

(2) Antennal sensoria somewhat oval, not very large ... ... Subtribe *Fordini*

Antennal sensoria annular, often very large ... ... Subtribe *Melaphidini*

(3) Wax glands well developed. ... ... Subtribe *Eriosomatini*

Wax glands not prominently developed ... Subtribe *Pemphigini*

Subtribe *Melaphidini*

Nurudea shiraii **Mats.** (PL. viii, 2, figs. 6–8).

Nurudeopsis shiraii, **Matsumura,** Essays for Nawa, p. 68 (1917).

Nurudea shiraii, **Baker,** Bull. U. S. Dept. Agr. No. 826, p. 74 (1920).

Winged viviparous female.

Described from specimens preserved in alcohol.

Head and eyes black. Mesothorax blackish brown. Antennae and legs pale brown. Abdomen yellowish brown. Stigma and veins pale brown.

Body oblong, without hairs. Eyes very large, with a small ocular tubercle. Antennae very short, 5-jointed; basal 2 joints subequal in length; the 3rd with 4–5, the 4th 5, the 5th 6–7 large ample sensoria; the relative length of joints as follows: III—22...23, IV—23...26, V—31...33.

Rostrum not reaching the middle coxae. Mesonotum without wax-plates. Stigma short; the 1st and 2nd obliques united at the base; the 3rd obsolete at the base and not forked; hind wings with 2 obliques; hooklets 2.

Cornicles inconspicuous. Cauda very short, not distinct, with the posterior margin rounded. Anal plate normal. Legs short and slender, with some very small setae.

Length of body—1.4 mm. Antenna—0.4 mm.
Fore wing—1.6 mm. Width of fore wing—0.6 mm.

Host.—*Rhus semialata*, producing galls.

Distribution.—Formosa (Taihoku, Kwanshirei); Japan.

The species leaves the gall on the summer host, *Rhus semialata*, and migrates to an unknown plant in the autumn in Formosa, as in Japan.

Subtribe *Fordini*

(1) Antennal sensoria of the winged form small and scattered over most of the segment. ... ... *Paracletus* **Heyden.**
Antennal sensoria of the winged form larger and mostly arranged in one line. ... ...*Geoica* **Hart.**

Geoica lucifuga (**van der Goot**).

Serrataphis lucifuga, **van der Goot,** Contrib. Fauna Indes Neerland. 1, iii, p. 264 (1917).

Host.—*Saccharum officinarum*, attacking the root.

Distribution.—Formosa (Daimokko); Java (v. d. Goot).

Hitherto unrecoreded from Formosa.

Collected by Mr. M. Ishida.

Paracletus cynodonti **(Das.)** (PL. xiv, 2, figs. 17–18)

Pemphigus? cynodonti, **Das,** Memoirs Indian Mus., vi, p. 153 (1918).

Host.—*Cynodon dactylon*.

Distribution.—Formosa (Taihoku); India (Das.)

Only wingless viviparous females have been collected by Mr. E. Kurosawa.

Subtribe *Eriosomatini*.

Tetraneura javensis, **van der Goot.**

Contrib. Fauna Indes Neerland., i, iii, p. 260 (1917).

Host.—*Saccharum officinarum*, attacking the root.

Distribution.—Formosa (Daimokko); Java (v. d. Goot).

Hitherto unrecorded from Formosa.

Only a few wingless viviparous females have been collected by Mr. M. Ishida.

Subtribe *Pemphigini*.

Dryopeia hirsuta **Baker,** (PL. xiv, 2, figs. 4–5)

Mthly. Bull. Dept. Agr. Calif., vol. x, No. 4, p. 159 (1921).

The Formasan specimens, I have examined, exactly agree with the Philippine *D. hirsuta*, except that in the former the 3rd antennal joint is more longer compared with that of the latter.

Host.—*Oryza sativa*, attacking the root.

Distribution.—Formosa (Tainan); Philippine (Baker).

Collected by Mr. Sawada. The winged form has never been collected.

Hitherto unrecorded from Formosa.

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PLATES.

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Explanation of Plates.

Plate I.

(I)

Macrosiphum neoartemisiae n. sp.

(Wingless viviparous female)

Fig. 1. Head.
Fig. 2. Antenna.
Fig. 3. Hind tarsus.
Fig. 4. Cauda.
Fig. 5. Cornicle.

Macrosiphoniella formosartemisiae n. sp.

(Wingless viviparous female)

Fig. 6. Head.
Fig. 7. Cornicle.
Fig. 8. Cauda.
Fig. 9. Antenna.

(2)

Macrosiphum alopeculi n. sp.

(Wingless viviparous female)

Fig. 1. Head.
Fig. 2. 3rd antennal joint.
Fig. 3. Cornicle.
Fig. 4. Cauda.
Fig. 5. Cauda.

Macrosiphum miscanthi n. sp.

(Wingless viviparous female)

Fig. 6. Head.
Fig. 7. Cornicle.
Fig. 8. Cauda.

Macrosiphum granarium (L.) (American specimen)

(Wingless viviparous female).

Fig. 9. Cauda.
Fig. 10. Cornicle.

Aphis somei Essig *et* Kuw.

(Winged viviparous female.)

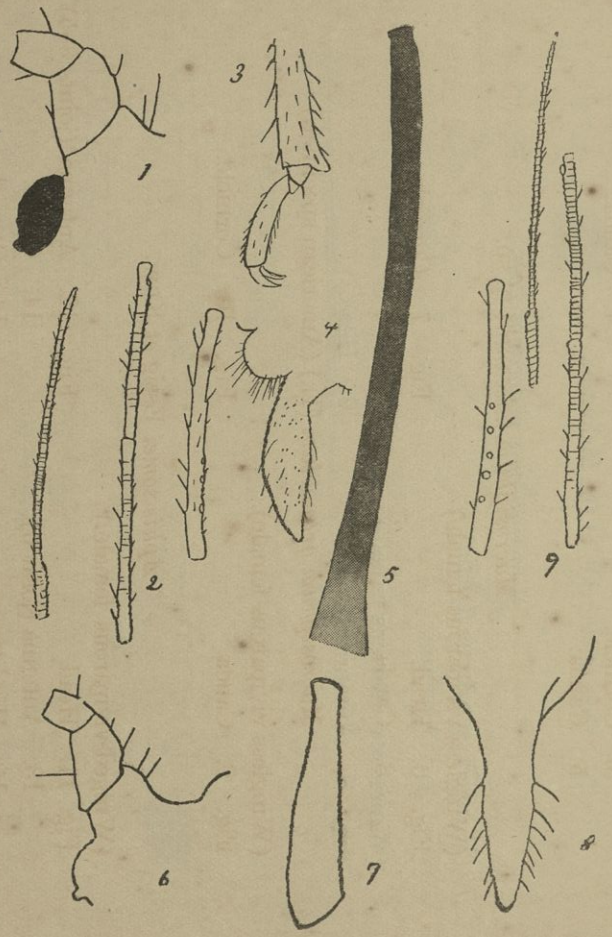
Fig. 11. Head.
Fig. 12. Antenna (joints 3–5)
Fig. 13. Antenna (joint 6)
Fig. 14. Cauda.
Fig. 15. Hind tarsus.
Fig. 16. Cornicle.

(Wingless viviparous female).

Fig. 17. Cornicle.
Fig. 18. Cauda.

PLATE I

(1)



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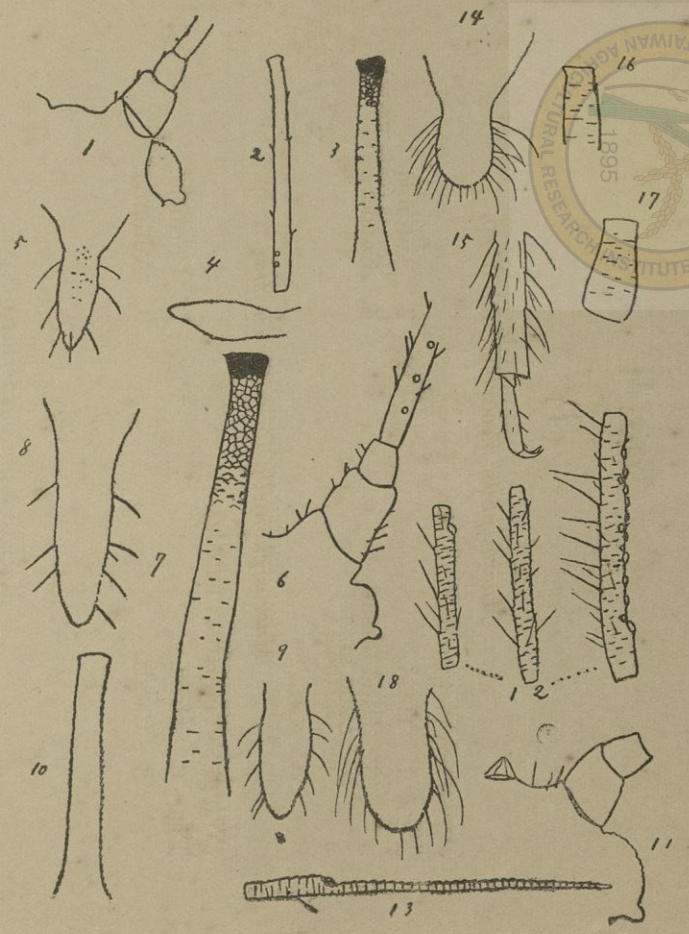

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Explanation of Plates.

Plate II.

(1)

Myzus polypodiacicola n. sp.

(Wingless viviparous female)

Fig. 1. Head. Fig. 2. Cornicle.
3. Antenna 4. Cauda (side view)
5. Hind tarsus

Myzus woodwardiae n. sp.

(Wingless viviparous female)

Fig. 6. Head. Fig. 7. Cornicle.
8. Cauda. 9. Abdominal end.

(2)

Macrosiphum paederiae n. sp.

(Wingless viviparous female)

Fig. 1. Head. Fig. 2. Antenna.
3. Cornicle. 4. Cauda.
5. Part of the side of the abdomen.

Neophyllaphis podocarpi Tak.

(Winged viviparous female).

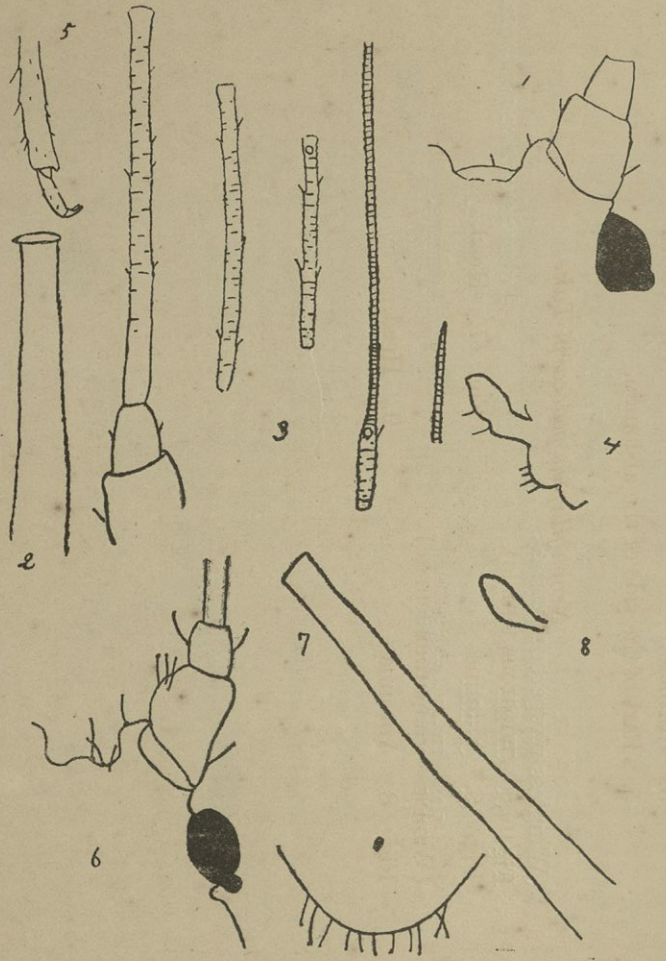
Fig. 6. Antenna. Fig. 7. Head.

(Wingless viviparous female)

Fig. 8. Antenna. 9. Head.

PLATE II

(1)



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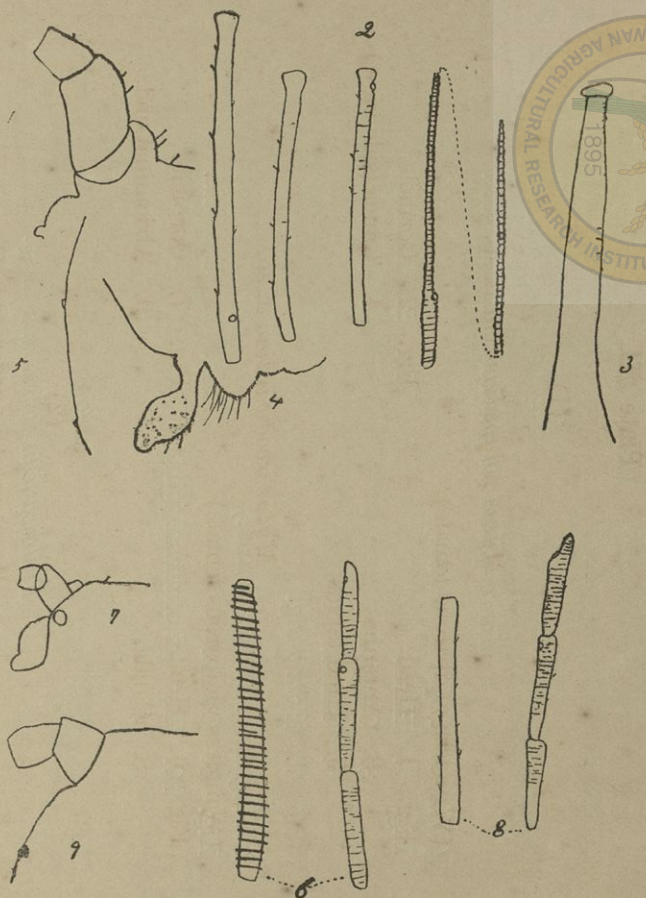

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Explanation of Plates.

Plate III.

(1)

Macrosiphoniella citricola van der Goot.

(Winged viviparous female)

Fig. 1. Head.
Fig. 2. Tarsus.
3. Cornicle.
4. Antenna.
5. Cauda.
6. „
7. Fore wing.

(Wingless viviparous female)

Fig. 8. Cauda.
Fig. 9. Cornicle.
10. The 3rd antennal joint.

(2)

Fullawayella formosana n. sp.

(Wingless viviparous female)

Fig. 1. Head.
Fig. 2. Antenna.
3. Cornicle.
4. Cauda.
5. Fore wing.

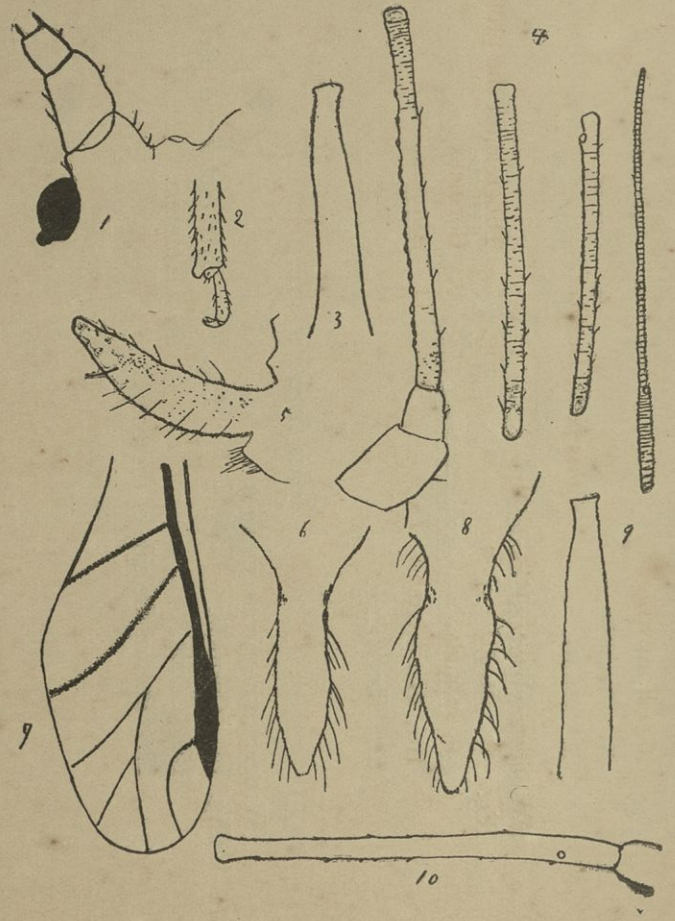
Aphis pomi De Geer.

(Wingless viviparous female).

Fig. 6. Head.
Fig. 7. Tubercle on the prothorax.
8. Cauda.
9. Cornicle.
10. Hind tarsus.
11. Antenna.

PLATE III

(1)



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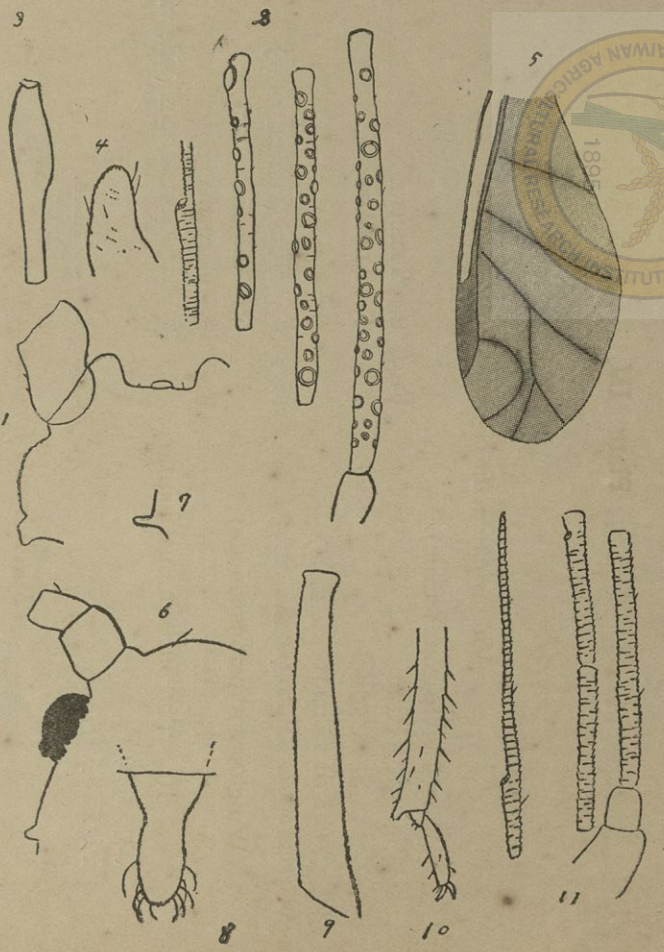

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Explanation of Plates.

Plate IV.

(1)

Vesiculaphis caricis (Full)

(Wingless viviparous female).

Fig. 1. Head.
Fig. 2. Cornicle.
3. Cauda.
4. Antenna.

(Winged viviparous female).

Fig. 5. Head (dorsal view)
Fig. 6. Head (ventral view)
7. Hind tarsus.
8. Antenna.
9. Cornicle.
10. Fore wing.
11. Hind wing.
12. Abdominal apex (side view).

(Nymph)

Fig. 13. Head.
Fig. 14. Cornicle.

(2)

Aphis smilacifoliae n. sp.

(Wingless viviparous female).

Fig. 1. Head.
Fig. 2. Hind leg.
3. Cornicle.
4. Cauda.
5. Cauda.
6. Antenna.

(Winged viviparous female).

Fig. 7. Head.
Fig. 8. Cornicle.
9. Hind tarsus and part of the tibia.
10. Antenna.
11. Cauda.
12. Fore wing.

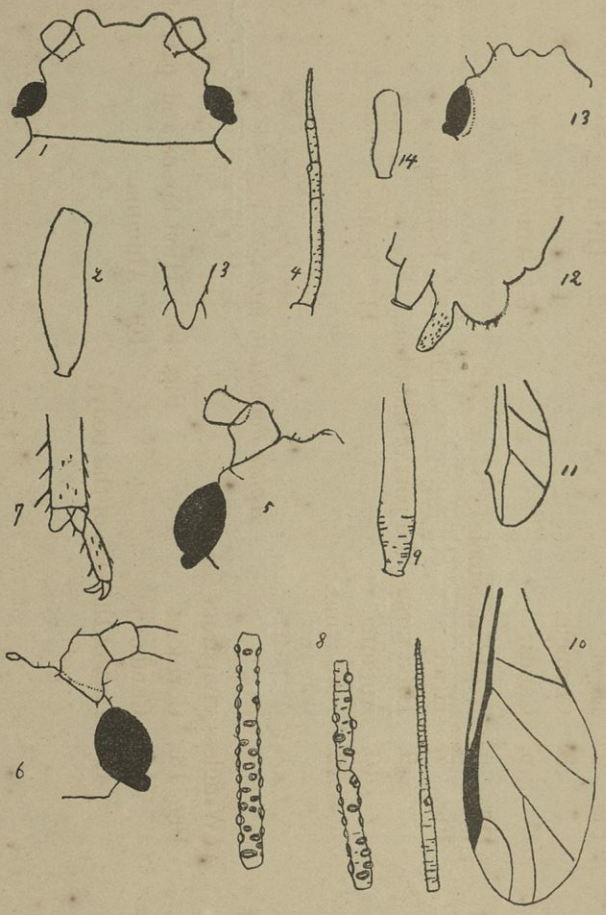
Aphis ficicola n. sp.

(Wingless viviparous female.)

Fig. 13. Cornicle.
Fig. 14. Hind tarsus and part of the tibia.
15. Cauda.
16. Antenna.
17. Part of the side of the body.

PLATE IV

(1)



(2)

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Explanation of Plates.

Plate V.

(1)

Aphis gossypii Glove. var. *callicarpae* n.

(Wingless viviparous female).

Fig. 1. Adult.
Fig. 2. Cauda.
Fig. 3. Cornicle.
Fig. 4. Antenna (joints 2–5) of nymph?
Fig. 5. Antenna.
Fig. 6. Hind tarsus.

Aphis shirakii n. sp.

(Wingless viviparous female).

Nymph?

Fig. 7. Nymph?
Fig. 8. Antenna.
Fig. 9. Cornicle.
Fig. 10. Abdominal apex.

Adult.

Fig. 11. Head.
Fig. 12. Cornicle.
Fig. 13. Antenna.
Fig. 14. Cauda.
Fig. 15. Hind tarsus.

(2)

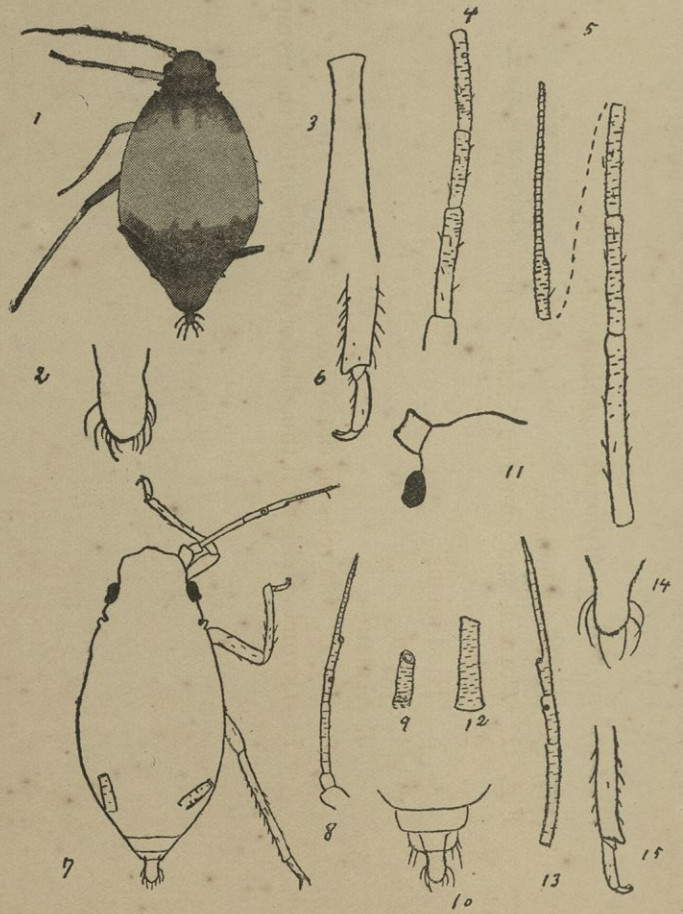
Myzocallis bambucicola n. sp.

(Winged viviparous female).

Fig. 1. Cornicle and lateral tubercles of the abdomen.
Fig. 2. Fore wing.
Fig. 3. Hind tarsus.
Fig. 4. Head.
Fig. 5. Antenna.
Fig. 6. Dorsal tubercles on the abdomen.
Fig. 7. Cornicle and lateral tubercles of the abdomen of the nymph.

PLATE V

(1)



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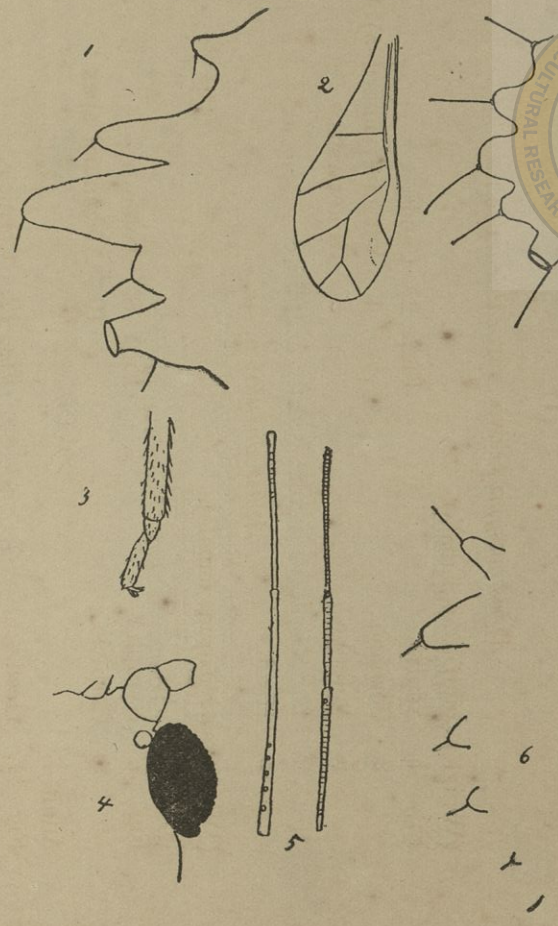

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Explanation of Plates.

Plate VI.

(1)

Phyllaphoides n. g. bambucicola n. sp.

(Winged viviparous female).

Fig. 1. Hind leg.
2. Antenna.
3. Fore wing.
4. Part of the wing-vein greatly magnified.
5. Head.
6. Body, with wings and legs removed.
7. Head of the nymph.
8. Abdominal apex of the nymph.

(2)

Greenidea taiwana n. sp.

(Wingless viviparous female)

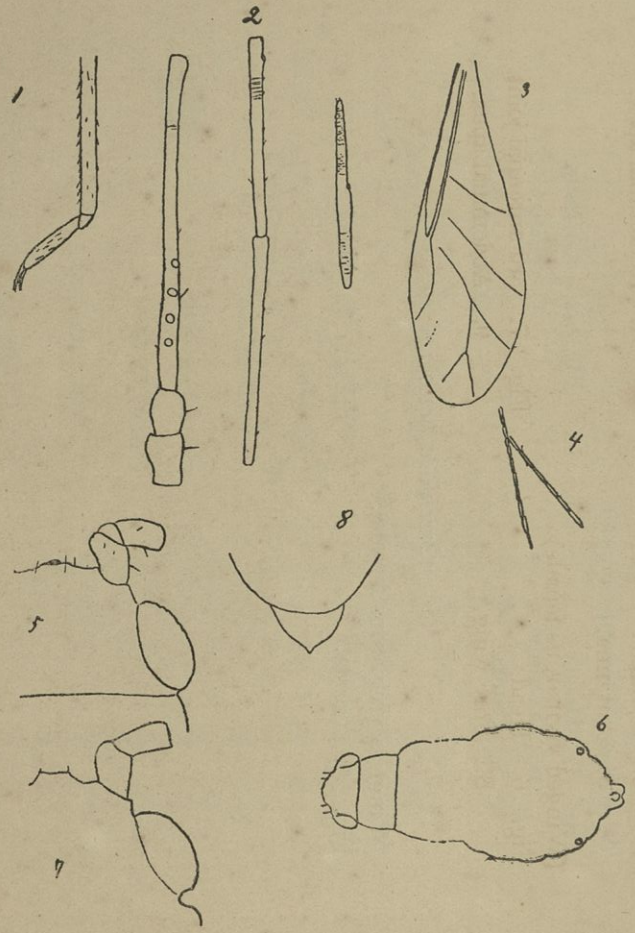
Fig. 1. Body.
2. Head.
3. Cornicle.
4. Abdominal apex.
5. Antenna.

(Winged viviparous female)

Fig. 6. Head.
7. 3rd antennal joint.
8. Fore wing.
9. Abdominal apex.

PLATE VI

(1)



(2)

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Explanation of Plates.

Plate VII.

(1)

Myzocallis pseudoalni n. sp.

(Winged viviparous female)

Fig. 1. Head. Fig. 2. Cornicle.
3. Antenna. 4. Forewing.
5. One of the tubercles on the dorsum of the abdomen.

Greenidea ficicola n. sp.

(Winged viviparous female)

Fig. 6. Third antennal joint. Fig. 7. Fore wing.
8. Cornicle. 9. Head.

(Wingless viviparous female)

Fig. 10. Cornicle.

(2)

Greenidea quercifoliæ n. sp.

(Wingless viviparous female).

Fig. 1. Head. Fig. 2. Cornicle.
3. Antenna. 4. Body.
5. Cauda.

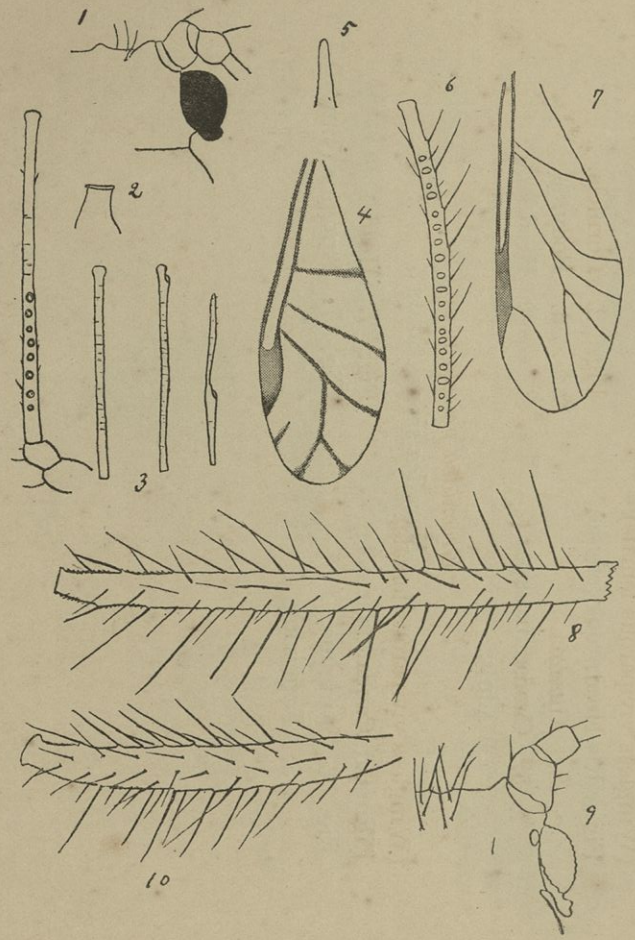
Greenidea ficicola n. sp.

(Wingless viviparous female).

Fig. 6. Cauda. Fig. 7. Head.

PLATE VII

(1)



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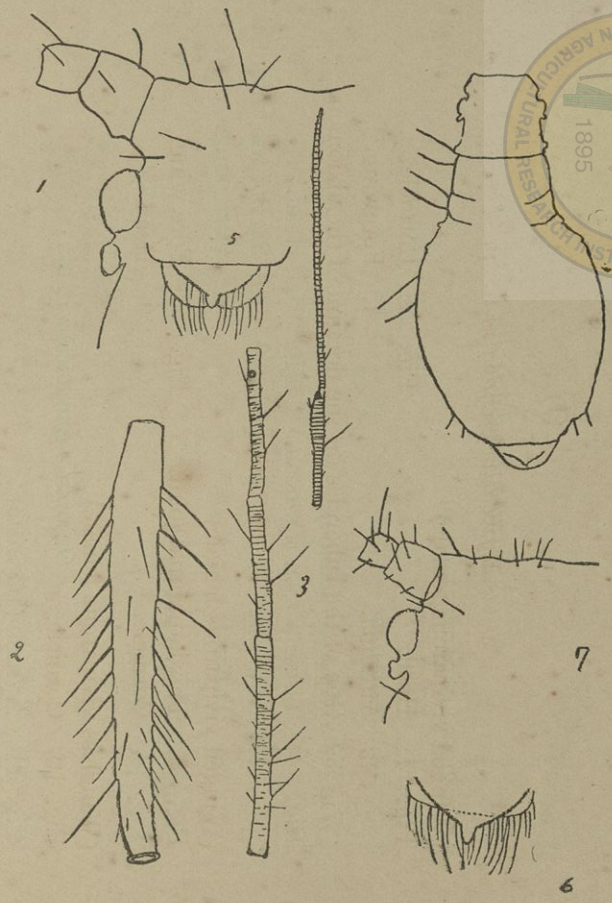

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Explanation of Plates.

Plate VIII.

(1)

Oregma bambucifoliæ n. sp.

(Wingless viviparous female)

Fig. 1. Head.
Fig. 2. Cauda.
3. Antenna.

(Winged viviparous female)

Fig. 4. Tubercles on the head.
Fig. 5. Head.
6. Antenna.
7. Part of the antennal joint.
8. Tarsus.
9. Fore wing.

(Wingless viviparous female)

Fig. 10. Adult.

Oregma bambucicola n. sp.

Fig. 11. Nymph (1st instar).

(2)

Oregma bambucicola n. sp.

(Wingless viviparous female)

Fig. 1. Head.
Fig. 2. Antenna.
3. Abdominal apex.
4. Hind leg.
5. Adult.

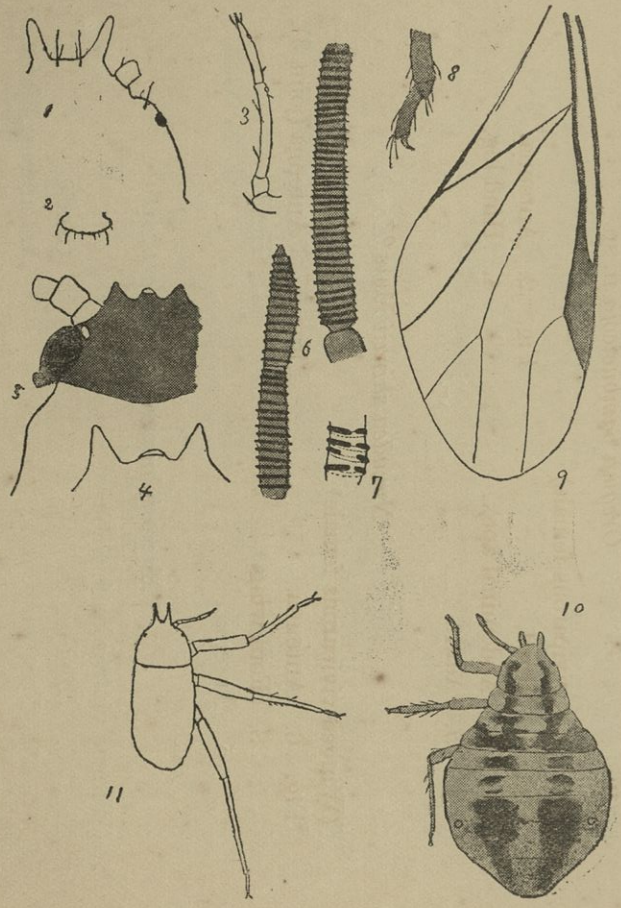
Nurudea shiraii Mats ?

(Winged viviparous female)

Fig. 6. Antenna.
Fig. 7. Antenna (joint 3).
8. Fore wing.

PLATE VIII

(1)



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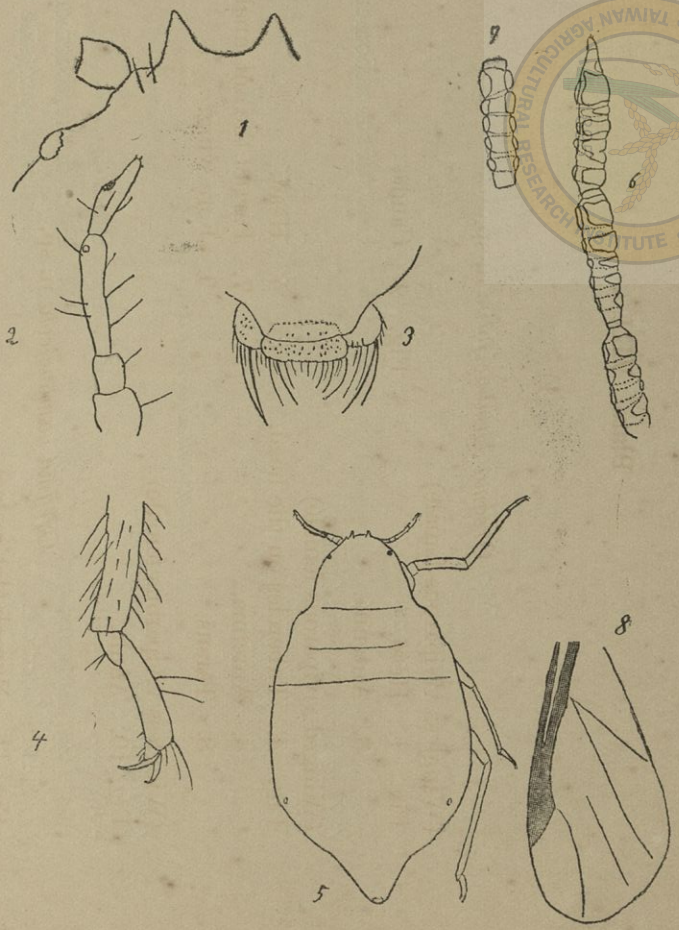

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Explanation of Plates.

Plate IX.

(1)

Cavariella bicaudata (Essig et Kuw.)

Fig. 1. Cornicle.
Fig. 2. Head.
Fig. 3. Antenna.
Fig. 4. Cauda.
Fig. 5. Hind leg.
Fig. 6. Horn of the abdomen.

(Winged viviparous female)

Fig. 7. Antenna.
Fig. 8. Cauda.
Fig. 9. Cornicle.

Cavariella Neocapræ n. sp.

(Winged viviparous female)

Fig. 10. Fore wing.
Fig. 11. Head.
Fig. 12. Antenna.
Fig. 13. Horn of the abdomen.
Fig. 14. Cornicle.
Fig. 15. Aldominal apex (side view).
Fig. 16. Cauda.

Aphis miscanthi n. sp.

(Wingless viviparous female)

Fig. 17. Antenna.
Fig. 18. Cornicle.
Fig. 19. Cauda.

(2)

Macrosiphoniella tanacetarium (*Koch*).

(Wingless viviparous female)

Fig. 1. Cauda.
Fig. 2. Cornicle.
Fig. 3. Hind leg.
Fig. 4. Head.
Fig. 5. Antenna.

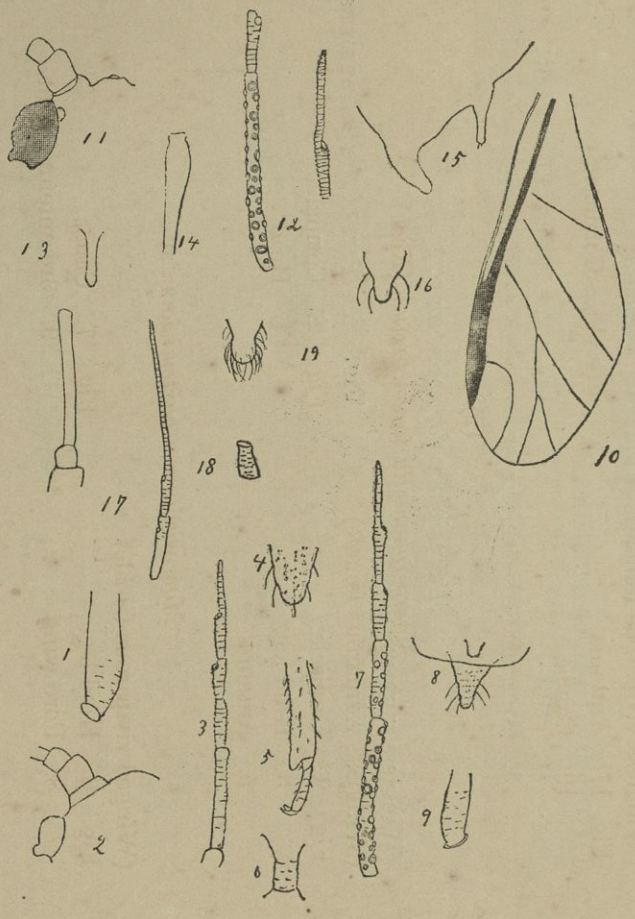
Macrosiphum neoartemisiæ n. sp.

(Winged viviparous female)

Fig. 6. Hind leg.
Fig. 7. Cauda.
Fig. 8. Fore wing.
Fig. 9. 3rd antennal joint.

PLATE IX

(1)



(2)

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Explanation of Plates.

Plate X.

(1)

Oregma lanigera (Zehnt.) collected on *Miscanthus* sp.

(Winged viviparous female)

Fig. 1. Antenna. Fig. 2. Fore wing.
3. Head. 4. Abdominal apex.

Vesiculaphis caricis (Full).

Fig. 5. Wingless viviparous female.

Macrosiphum rosæ (L.)

(Wingless viviparous female)

Fig. 6. Cauda. Fig. 7. 3rd antennal joint.
8. Cauda of nymph.

(2)

Lachnus thujafolia Theobald.

(Wingless viviparous female)

Fig. 1. Adult. Fig. 2. Antenna (3rd joint).
3. Antenna (4th–6th joints). 4. Hind leg.

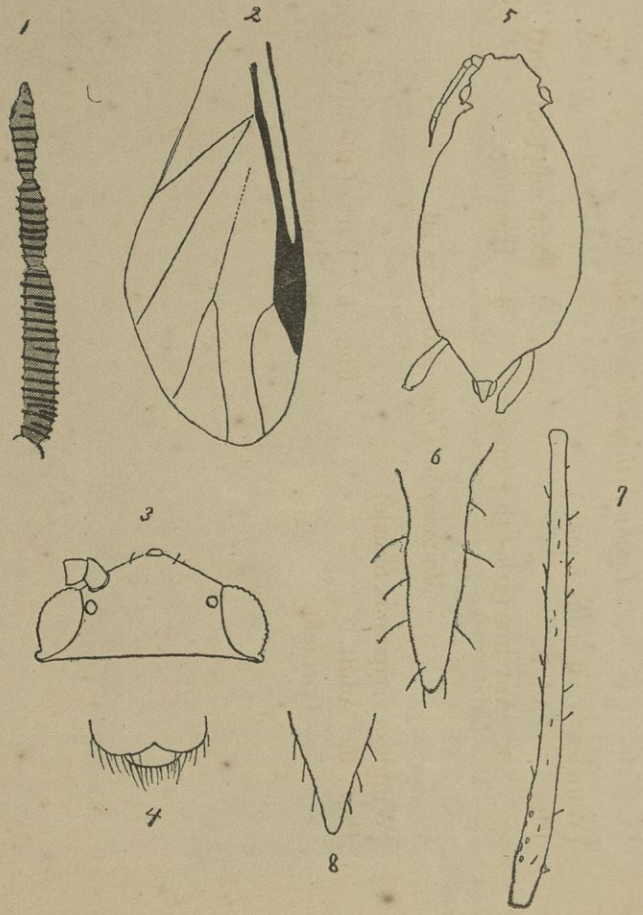
Macrosiphum formosanum n. sp.

(Wingless viviparous female)

Fig. 5. Adult. Fig. 6. Part of the 3rd antennal joint.
7. Cornicle. 8. Cauda.

PLATE X

(1)



(2)

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Explanation of Plates.

Plate XI.

(1)

Shivaphis celti Das.

(Winged viviparous female)

Fig. 1. Head.
Fig. 2. Abdominal apex.
3. Hind leg.
4. Antenna.
5. Fore wing.
6. Abdominal apex (under side)
7. Hind femur.

(2)

Aphis malvæ Koch. (on *Durranta*)

(Wingless viviparous female)

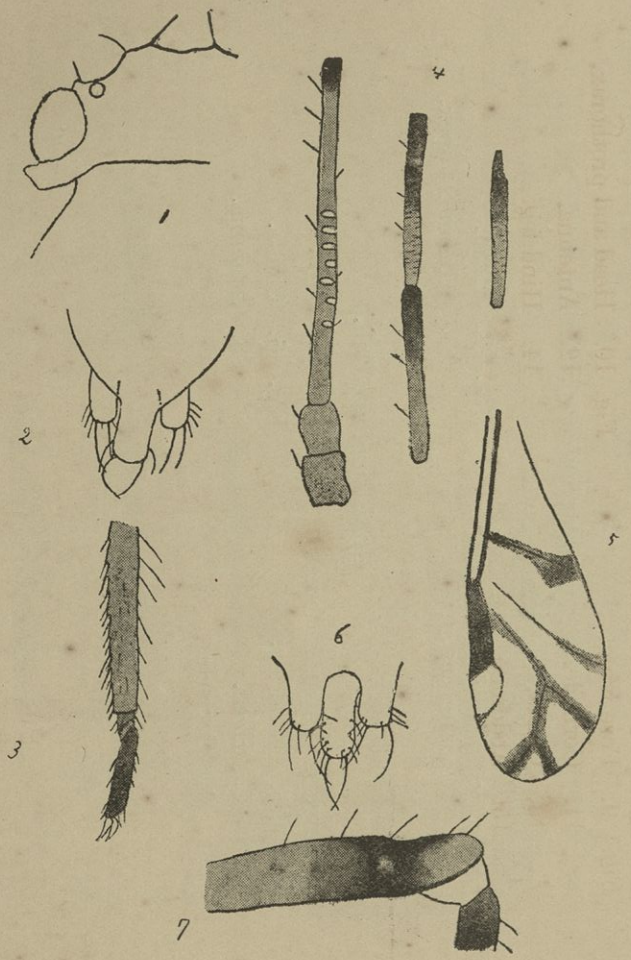
Fig. 1. Antenna.
g. 2. Antenna.
3. Cornicle.
4. Cornicle.
5. An abnormal right antenna of an adult wingless female.
6. Head and prothorax.
7. Hind leg.
8. Cauda.

(Winged viviparous female)

Fig. 9. Fore wing.
Fig. 10. Head and prothorax.
11. Cornicle.
12. Antenna.
13. Cauda.
14. Hind leg.
15. Abdomen.

PLATE XI

(1)



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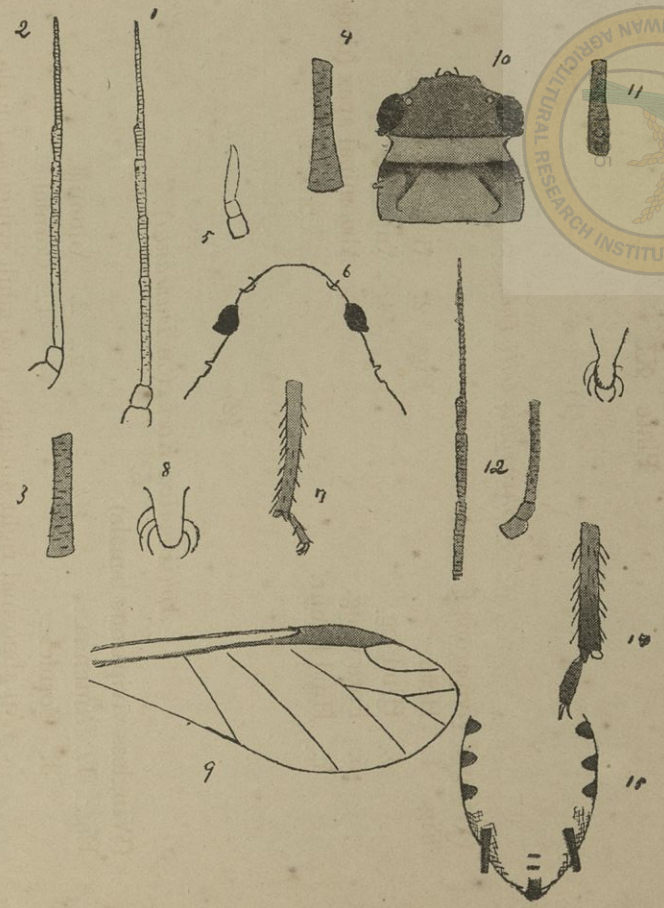

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Explanation of Plates.

Plate XII.

(1)

Aphis gossypii Glove, var. *callicarpæ* n.

(Winged viviparous female)

Fig. 1. Head.
Fig. 2. Tubercle on prothorax.
Fig. 3. Cornicle.
Fig. 4. Cauda.
Fig. 5. Hind leg.
Fig. 6. Fore wing.
Fig. 7. Antenna.
Fig. 8. Abdomen.
a. dark green b. dusky.
c. yellow.

Brachycolus heraculi n. sp.

(Wingless viviparous female)

Fig. 9. Cornicle.
Fig. 10. Cauda.
Fig. 11. Hind leg.
Fig. 12. Antenna.

(Winged viviparous female)

Fig. 13. Cornicle.

(2)

Oregma lanigera (Zehnt.)

(Wingless viviparous female)

Fig. 1. Adult.
Fig. 2. Head.
Fig. 3. Hind leg.
Fig. 4. Abdominal apex.

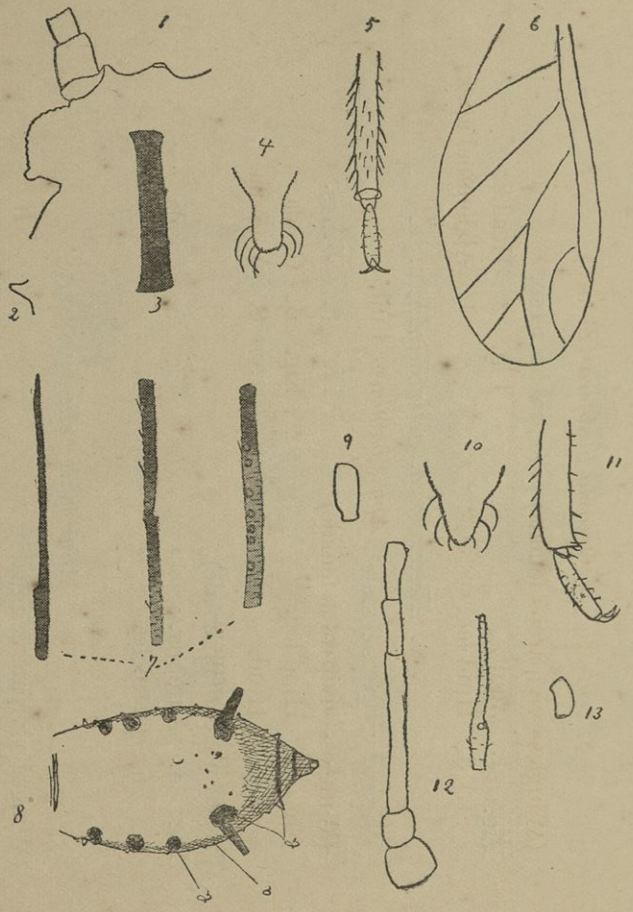
Aphis bambusæ Full.

(Wingless viviparous female)

Fig. 5. Hind leg.
Fig. 6. Cauda.
Fig. 7. Head.
Fig. 8. Antenna.
Fig. 9. Cornicle.

PLATE XII

(1)



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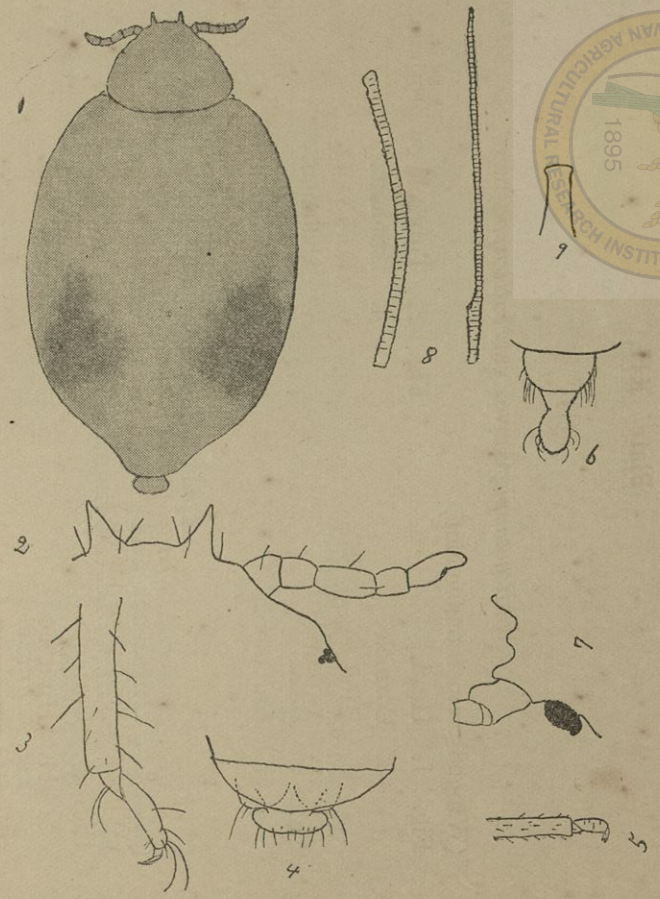

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Explanation of Plates.

Plate XIII.

(1)

Rhopalosiphum papaveri n. sp.

(Wingless viviparous female)

Fig. 1. Cauda. Fig. 2. Head.
3. Cornicle 4. Antenna.

(Winged viviparous female)

Fig. 5. Head. Fig. 6. Cauda.
7. Abdomen. 8. Cornicle.

Aphis saliceti Kalt.

(Wingless viviparous female)

Fig. 9. Outline of one abdominal side.
10. Cauda.
11. Cornicle.
12. Head.

(Winged viviparous female)

Fig. 13. Cornicle. Fig. 14. Hind tarsus.

(2)

Cavariella araliæ n. sp.

Fig. 1. Antenna.

Aiceona (*n. g.*) *actinodaphni* n. sp.

(Winged vivipaus female)

Fig. 2. Antenna. Fig. 3. Wings.

Yamataphis papaveri n. sp.

(Winged viviparous female)

Fig. 4. Antenna. Fig. 5. Cauda.
6. Cornicle.

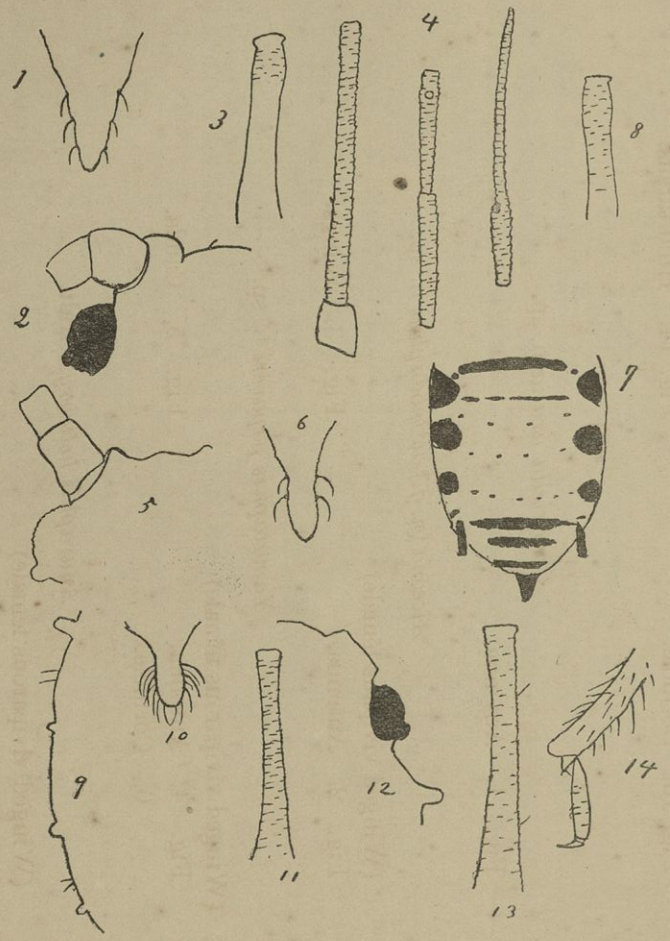
Anuraphis helichrysi Kalt.

(Winged vlviparous female)

Fig. 7. Cauda. Fig. 8. Cornicle.
9. Antenna.

PLATE XIII

(1)



(2)

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Explanation of Plantes.

Plate XIV.

(1)

Myzus polygoniformosanus n. sp.

(Wingless viviparous female)

Fig. 1. Cauda. Fig. 2. Head.
3. Cornicle.

Phorodon humuli (Schrank).

Fig. 4. Head of wingless viviparous female.

Brachysiphoniella (n. g.) *gramini* Takah.

(Wingless viviparous female)

Fig. 5. Cornicle. Fig. 6. Cauda.

Aphis droseræ n. sp.

(Wingless viviparous female)

Fig. 7. Head. Fig. 8. Cornicle.
9. Cauda.

Aphis formosanus n. sp.

(Winged viviparous female)

Fig. 10. Fore wing. Fig. 11. Cauda.
12. Hind tarsi. 13. Cornicle.
14. Head.

Aphis sp. collected on *Piper betle.*

(Winged viviparous female)

Fig. 15. Cauda. Fig. 16. Cornicle.

(Wigless viviparous female)

Fig. 17. Cornicle. Fig. 18. Cauda.

(2)

Aphis kurosawai n. sp.

(Winged viviparous female)

Fig. 1. Cornicle. Fig. 2. Cauda.
3. Antenna.

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Explanation of Plantes.

Dryopeia hirsuta Baker.

(Wingless viviparous female)

Fig. 4. Antenna. 5. Hind leg.

Astegopteryx giganteum n. sp.

(Winged viviparous female)

Fig. 6. Part of antenna.

7. Head. 8. Cauda.

9. Anal plate. 10. Sensoria on subcosta.

Periphyllus formosanus n. sp.

(Wingless viviparous female)

Fig. 11. Cornicle. Fig. 12. Head.

(Winged viviparous female)

Fig. 13. Apex of hind leg.

Eulachnus piniformosanus n. sp.

(Winged viviparous female)

Fig. 14. Antenna. Fig. 15. Head.

16. Outline of cauda.

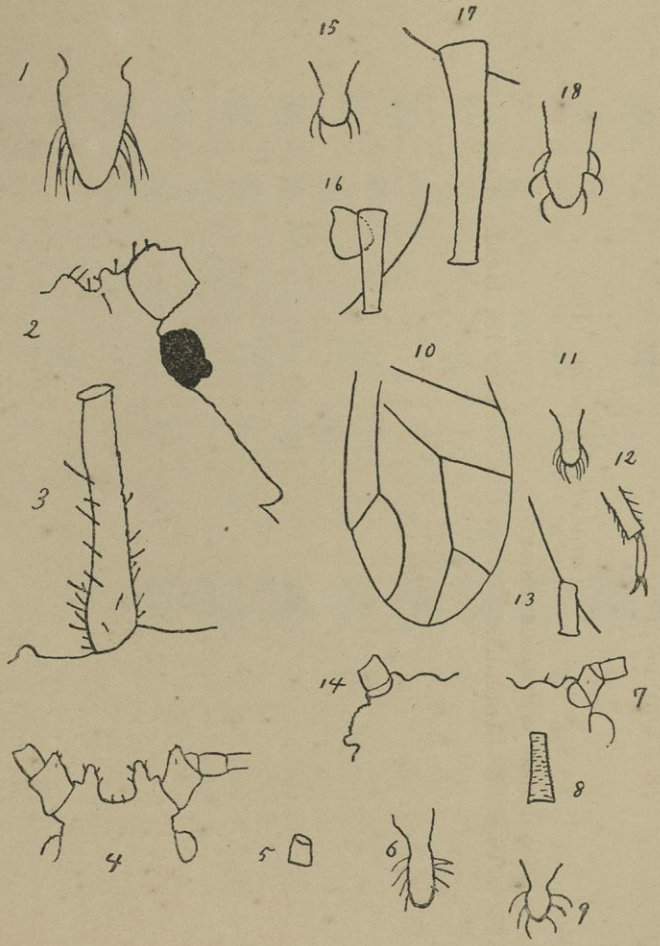
Paracletus cynodonti (Das)

(Wingless viviparous female)

Fig. 17. Antenna. Fig. 18. Head.

PLATE XIV

(1)



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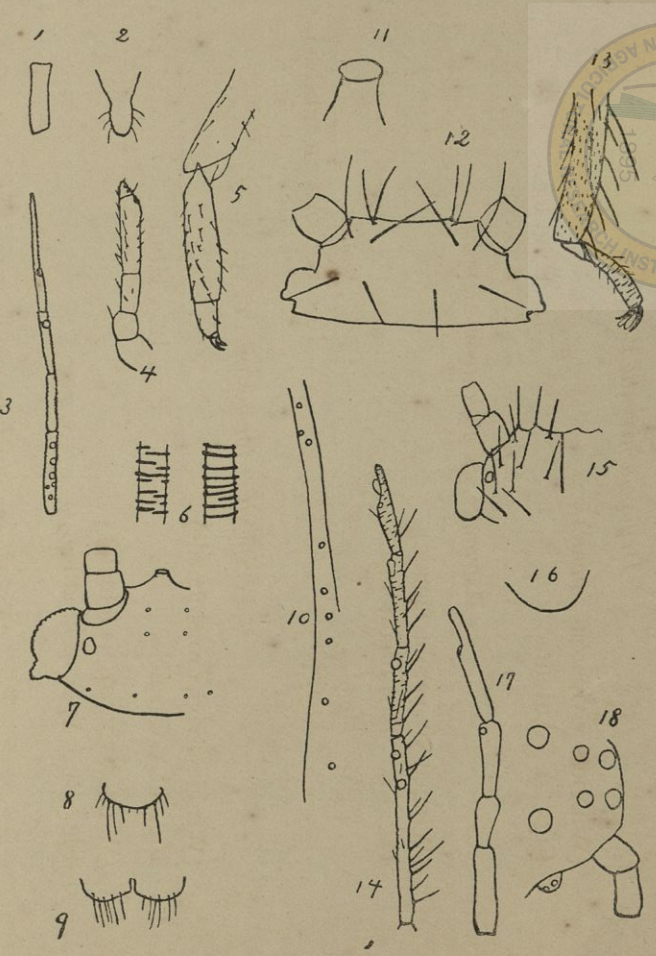

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